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LA JOLLA, CA 92093-0608

February 1990

AXOCLAMP-2A

MICROELECTRODE CLAMP

SERVICE

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WARNING

THIS INSTRUMENT OPERATES FROM LINE VOLTAGES. DO NOT PERFORM ANY SERVICING UNLESS YOU ARE QUALIFIED TO DO SO. LINE VOLTAGES ARE PRESENT IN THE LEFT-MOST SECTION BETWEEN THE POWER ON/OFF SWITCH AND THE LINE INPUT FILTER.

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LIST OF ILLUSTRATIONS

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THEORY OF OPERATION

GENERAL

The AXOCLAMP-2A contains amplifiers for 2 separate microelectrodes (ME1 and ME2).

In Bridge mode both microelectrodes are used for continuous current passing and voltage recording.

In DCC mode (discontinuous current clamp) the current in ME1 is chopped by high-speed switching circuitry and the voltage on ME1 is sampled between current pulses. ME2 is used for continuous current passing.

There are three voltage-clamp modesDuring voltage clamp current is passed down the microelectrode to maintain the cell membrane at the command voltage. The required current is determined by a negative feedback circuit.

1. TEVC mode (two-electrode voltage clamp) is used for conventional voltage clamping. ME1 is used to record membrane potential (V_m). ME2 is used to pass the required current.

2. dSEVC mode (discontinuous single-electrode voltage clamp) uses ME1 for both voltage recording and current passing. The required input of the negative feedback circuit is V_m. Because of the large resistance of normal intracellular electrodes V_m cannot be measured during current passing. Therefore the current in ME1 is chopped by high-speed switching circuitry and the voltage on ME1 is sampled between current pulses. ME2 can be independently used as in Bridge mode.

3. cSEVC mode (continuous single-electrode voltage clamp). Like dSEVC, this mode uses ME1 for both voltage recording and current passing during voltage clamp. Unlike dSEVC, in this mode current passing is continuous and thus the voltage drop in the electrode due to current flow is measured. This voltage drop introduces an error. cSEVC only works with very low resistance suction electrodes so that the error is small. The ME1 Bridge potentiometer allows some of this voltage drop to be compensated.

Command voltages for both current passing and voltage clamping are generated internally but timing for these commands must come from external sources.

For a complete description of the operation of the AXOCLAMP-2A see the Theory and Operation manual.

POWER SUPPLY - ASSEMBLY No. A1001

Located in the left-hand section of the instrument.

WARNING: Line voltages are present in the power-supply section.

The line input connector contains an RFI filter, the fuse in use and a spare fuse. A slide switch on the circuit board puts the two primary windings into series or parallel connection for 230 V or 115 V operation respectively. Line voltages from 200-260 V and 100-130 V_{ac} are acceptable.

Five regulated outputs are generated: +30 V, -30 V, +15 V, -15 V, +5 V. Standard 3-terminal regulators are used. Test points on the circuit board allow the regulator input and output voltages to be conveniently measured. 2 mV of line-frequency noise and 2 mV of wideband noise are acceptable. This noise is rejected by the rest of the circuitry.

REMOTE INPUT AND CONTROL LOGIC - ASSEMBLY No. A1002

Power Distribution

All power for the main circuit board comes from the power supply board to connector J8.

Mode Select

All switching between modes is done on the main circuit board by relays. U6, U7 and U8 are used to decode the Mode Select switches. U9 contains 7 Darlington transistors for driving relays and the Mode lamps.

Clock Sequence Generator

U1-U5 are used to generate the logic signals for controlling the high-speed switching between current passing and voltage recording. U1 is a voltage controlled oscillator (VCO) whose frequency is set by the Rate control. U2 is a Johnson counter which divides the VCO clock by ten and has an output cycle divided into ten segments. U3 and U4 convert the ten segments into the required control signals (see Fig. 1). SH1 activates the main sample-and-hold (SH1) in the ME1 section. SH2 activates the sample-and-hold used for current measurement. CCS switches the ME1 constant current source from current passing to voltage recording. In each cycle, a sample of voltage is taken (10% of cycle) and then current passing begins (30% of cycle). Shortly after current passing begins the sample-and-hold used for current measurement is activated (20% of cycle). A HI logic signal on the Blank Activate input prevents SH1 from taking samples but does not otherwise affect the cycling.

U13 is a quad 2-input multiplexer used for synchronizing the clocks of two AXOCLAMPs. Unless a second AXOCLAMP is connected all the switches in U13 remain in the positions shown.

U15 is a frequency-to-voltage converter. It is used to drive the voltmeter which indicates the Sample rate.

Remote Clear Buzz

Relays used for Buzz and Clear are driven by Darlington transistors in U10. Each transistor can be switched on by a front-panel switch, or by a logic HI signal applied through the remote connector or rear-panel Buzz jacks.

5V REFERENCE / STEP COMMAND GENERATOR / DESTINATION SWITCH - ASSEMBLY No. A1002

Voltage reference A2 and inverting amplifier A3 provide a stable +5V (+V_R) and -5V (-V_R) reference for use by the rest of the circuit.

A1 and A2 located on the thumbwheel switch board comprise a multiplying D/A converter. The output of A2 corresponds to the setting of the switch. Polarity is changed by swapping the D/A input between +V_R and -V_R. U12 is a CMOS switch used to convert the D/A output into a ground-referenced voltage step. Duration of the step is set by the External Step Activate input or the front-panel switch. The Destination switch determines whether the step voltage will be passed to the ME1 section, the ME2 section, or the voltage clamp section. A calibration signal is generated in A1 and is proportional to the setting of the thumbwheel switch. Duration of the calibration pulse is set by the external Cal. Activate input.

MICROELECTRODE 1 (ME1) - ASSEMBLY No. A1002

Transistors Q3 and Q4, and current regulator diodes CRD3 and CRD4 comprise a floating ±10 V power supply for the headstages. The transistors are configured to simulate 10 V zeners. The common point of the floating supply is driven by the electrode voltage (V1A). A12 is a ±30 V amplifier providing positive feedback to the headstage input through C_N (inside the headstage). This feedback compensates the input capacitance (capacitance neutralization).

A15 and R_0 (inside the headstage) comprise a constant current source (CCS). The command voltage on R53 is forced across R_0 thereby setting the electrode current. The command voltage either comes from the voltage-clamp circuit or from summing amplifier A16, depending on the position of relay RL6. The gain of A16 is boosted 3.3 times by RL6 during DCC mode. This 3.3 boost compensates for the 30% current duty cycle during discontinuous current passing. Relays RL8-9 set the command voltage of the CCS to large positive or negative values. The resulting large currents are used to clear blocked electrodes.

The Bridge pot, A28 and A32 are used to subtract the voltage drop across the electrode from the total electrode voltage. This voltage drop is the product of the measured current (I1A) and the Bridge pot setting. In DCC mode the Bridge pot is disabled by RL10. In cSEVC mode the subtraction range is reduced to one tenth. A19 buffers a first-order lowpass filter.

Electrode current is proportional to the voltage drop across R_0. This is measured by A14. Sample-and-hold A17 acts as a unity-gain buffer during Bridge mode. During DCC it samples the current pulses. RL11 changes the current scaling during DCC to compensate the measurement for the 30% duty cycle. A18 buffers a first-order lowpass filter.

MICROELECTRODE 2 (ME2) - ASSEMBLY No. A1002

This section is similar to the ME2 section with the following differences.

The CCS (A6) is connected to the command summing amplifier (A9) in all modes. A9 has a fixed gain. During two-electrode clamp relay RL2 bypasses the CCS and connects the output of the ±30 V amplifier A7 to R_0. There is no lowpass output filter.

Switches S3-5 determine the position of the decimal point in the current meter. One of these three switches is activated depending on the position of the Current Display Select switch (S2).

VOLTAGE CLAMP AND V1 CONTINUOUS - ASSEMBLY No. A1002

Voltage Clamp

The microelectrode headstage voltage is amplified 20 times in amplifier A21. The bath potential (V_B) is lowpass filtered by A29 and subtracted from V1A in A21. If no bath headstage is used, R218 sets V_B = O V.

The output of A21 goes through the lowpass Anti-Aliasing filter (which is useful in DCC and dSEVC modes) and becomes the input of A22, a high-speed unity-gain sample-and-hold amplifier. The output of A22 ($20V_M$) is used in the ME1 section to form the $10V_M$ output. $20V_M$ also becomes the input of the summing amplifier A24. In A24, $20V_M$ is compared with the voltage-clamp command voltages coming out of A27.

The phase-shift network adds phase lag or lead to the output of A24. The signal is then amplified in A25 and A26 to produce the voltage-clamp output fed to ME1 during SEVC and ME2 during TEVC. RL12 corrects the total gain during cSEVC.

Amplifier A23a buffers the input to A22 so that this signal can be observed by the experimenter on the Monitor output. A23b subtracts the sampled potential so that the Monitor signal remains centered on OV. Amplifier A20c detects the condition of zero output from the voltage-clamp circuit. This condition occurs when the Holding Position potentiometer balances V1A.

V_1 Continuous

The offset voltage generated in A20a is added to the buffered headstage voltage (V1B) in A18a. Bath potential is subtracted in A10b and the calibration signal is added.

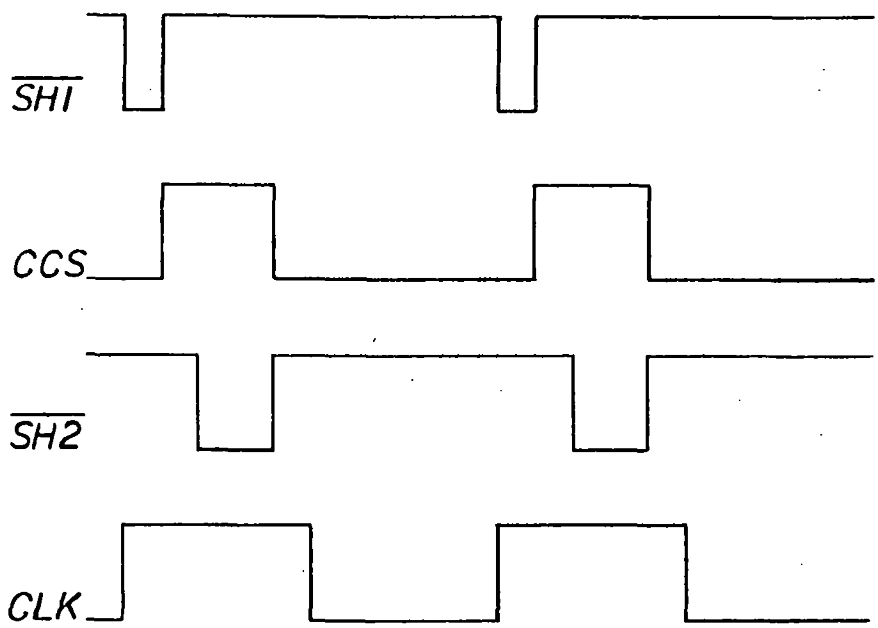


FIG. 1 - TIMING DIAGRAM DURING DCC and dSEVC MODES

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MAINTENANCE

Adjustment and repair should only be attempted by skilled electronic technicians or engineers.

CAUTION

Line voltage is connected to some of the transformer leads and some parts of the power-supply board in the left hand side of the instrument. Always unplug the power cord before attempting to handle or repair these sections.

ACCESS

All test points and trim potentiometers can be accessed by removing the top cover.

All components can be desoldered from the main circuit board without removing the board. Simply remove the bottom cover for access to the non-component side of the board.

ROUTINE MAINTENANCE

Routine maintenance is not required. The adjustment procedure should be performed after repairs to the main circuit board but not otherwise.

As required, the operator of the instrument can perform the headstage leakage current adjustment described in the operator's manual.

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SPECIFICATIONS

MODES

Five main operating modes selectable by color-coded illuminated push buttons, or remotely. These are:

1. **Bridge**
2. **DCC:** Discontinuous Current Clamp
3. **dSEVC:** Discontinuous Single-Electrode Voltage Clamp
4. **cSEVC:** Continuous Single-Electrode Voltage Clamp
5. **TEVC:** Two-Electrode Voltage Clamp

MICROELECTRODE AMPLIFIERS (Two Channels)

Unity-Gain Headstages: Standard is the HS-2L type. HS-2M types are the same except:
1) the noise is greater by about 20%
2) the capacitance neutralization range is extended.

HS-2MG types are similar to the HS-2M types except that the case is grounded instead of driven.

Hum (line-frequency pickup): Less than 10 μV peak-to-peak, grounded input.

Headstage Current Gain (H): Available in 5 values (specify two with order). Select on basis of cell input resistance (R_{in}) and maximum current capacity (I_{max}).

H = x0.0001 for ion-sensitive electrodes
H = x0.01 for R_{in} greater than about 300 MΩ
H = x0.1 for R_{in} about 30-300 MΩ
H = x 1 (standard) for R_{in} about 3-30 MΩ
H = x10 for R_{in} about 300 kΩ to 3 MΩ

These ranges are suggested for optimum performance. Some overlap is allowable.

Maximum Current: I_{max} = 1000 x H nA.

Noise with grounded input: 5 μV rms measured with a 10 kHz single-pole filter in the measurement circuit.

Noise with a source resistance: 51 (47) μV rms measured with a 10(100) MΩ source resistance and capacitance neutralization adjusted for a 10(1) kHz bandwidth and with a 10 (1) kHz single-pole- filter in the measurement circuit. Values are for H = x1 (x0.1), HS-2L headstage.

1% Settling Time: 16(54) μs for a voltage step applied to the input via a 10(100) MΩ low-capacitance resistor and 16(60) μs for a current step into the same resistor. Capacitance neutralization adjusted for zero overshoot. Values are for H = x1 (x0.1).

Working Input Voltage Range:	±13 V for transients and steady state, protected to ±30 V. Input Resistance: 10^{14}-10^{15} Ω, H = x 0.0001 (see note)* 10^{13} Ω, H = x .01 10^{12} Ω, H = x 0.1 10^{11} Ω, H = x 1 10^{10} Ω, H = x 10

*Note: For the x0.0001 headstage, the input resistance of each headstage is measured individually. The unique test results are supplied with each x0.0001 headstage.

Input Capacitance:	Not relevant. See 1% settling time and noise specifications.
Input Leakage Current:	Adjustable to zero.
Input Leakage Current vs. Temperature:	10 fA/ °C, H = x0.0001 100 fA/ °C, H = x0.01, x0.1 1 pA/ °C, H = x1 10 pA/ °C, H = x10
Offset Neutralization Range:	±500 mV. Ten-turn potentiometers.
Capacitance Neutralization Range:	HS-2L: -1 to 7 pF HS-2M: -2 to 20 pF HS-2MG: -4 to 18 pF These values apply when headstage is used with microelectrode 1 amplifier. With microelectrode 2 amplifier the maximum values are doubled.
Buzz:	Instantly increases capacitance neutralization to cause oscillation. Operated by spring-loaded pushbutton switch, footswitch or by Remote Buzz Duration control. The latter allows the Buzz duration to be set in the range 1-50 ms.
Buzz Duration:	1-50 ms when activated by the remote buzz control.
Clear:	Forces $\pm I_{max}$ through the microelectrode. Spring-loaded toggle switch.
Bridge Balance Range:	10÷H MΩ/turn in Bridge mode. 1÷H MΩ/turn in cSEVC mode. Ten-turn potentiometers.
Digital Voltmeters:	**Voltage Displays:** ±1999mV. Separate meters for V_1 and V_2 **Current Displays:** ±19.99 pA, H = x 0.0001 ±1.999 nA, H = x .01 ±19.99 nA, H = x.0.1 ±199.9 nA, H = x 1 ±1.999 mA, H = x 10 Scaling is set by miniature panel switches. Display selections are I_1, I_2 and I_{virt}. Currents exceeding the digital display range can be measured on the BNC outputs.

Outputs:

$10 \cdot V_m$ and I_m are membrane voltage (gain = 10) and current recorded by microelectrode 1.
V_1 and I_1 are the continuous microelectrode 1 voltage and current.
V_2 and I_2 are microelectrode 2 voltage and current.
MONITOR is the output of the anti-alias filter (equals the input of the sampling device). Gain = 10. Baseline correction circuit automatically references Monitor trace to zero volts.

Gain of current outputs is 10 ÷ H mV/nA. Maximum output level is ± 13V.

Current outputs indicate the **true** electrode current.

Output Lowpass Filter Cutoff:

0.1, 0.3, 1, 3, 10, 30 kHz.
Operates on V_m and I_m. Single-pole filter.

Output impedances are 500 Ω. ±10%

VOLTAGE CLAMP

10% - 90% Rise Time:

The following values were measured using 10 MΩ and 1 nF in parallel to model the cell, 10 MΩ resistors to model the microelectrodes, and a 10 mV step command.

Rise Time in dSEVC mode = 100 μs.
Rise Time in TEVC mode = 30 μs.

Gain:

Maximum in dSEVC mode is 100 x H nA/mV.
Maximum in cSEVC mode is 1000 x H nA/mV.
Maximum in TEVC mode is 10,000 mV/mV.
Range is 300:1, logarithmic scale.

Output compliance: ±25 V.

Phase Shift:

Time Constant (ms)	OFF	0.02	0.2	2	20	200
Lead range (ms)	0	0-0.04	0-0.4	0-4	0-40	0-400
Lag range (ms)	0	0-0.02	0-0.2	0-2	0-20	0-200

Anti-Alias Filter: Time constant range 0.2-100 μs

RMP Balance Indicators: Equal brightness indicates voltage clamping will be at resting membrane potential.

Blank: Stops clamp from responding to new inputs for the duration of a HIGH control signal on the BLANK ACTIVATE input. Used to reject stimulus artifacts.

Series Resistance Compensation:

Operates in cSEVC mode. Value set on Bridge potentiometer. External input at 100 mV/V can be used in TEVC mode.

SAMPLING CIRCUIT

Rate:	500 Hz to 50 kHz. Operates in DCC and dSEVC modes only.
Counter:	3-digit display to 99.9 kHz max. Blanked in continuous modes.
Sample Clock:	Logic-level trigger output at the sampling rate.
Sample Acquisition Time:	1 μs (10 V step to 0.1%)

INTERNAL COMMANDS

Note: Commands from all sources sum linearly.

Voltage Clamp Step Command:	±199.9 mV. Set on thumbwheel switch. Activated by a HIGH control signal on the STEP ACTIVATE input or by a front-panel switch.
Voltage Clamp Holding Position:	Range ±200 mV transmembrane potential. Ten-turn potentiometer.
Current Clamp Step Command:	±199.9 x H nA. Set on thumbwheel as above.
DC Current Command:	±100 x H nA. Ten-turn potentiometers.

EXTERNAL COMMANDS

Sensitivities:

Ext. VC command: 20 mV/V
Series resistance compensation: 100 mV/V
Ext. ME 1 (microelectrode 1) command: 10 x H nA/V
Ext. ME 2 (microelectrode 2) command: 10 x H nA/V
Input Impedance: 22 kΩ

Max. Input Voltages:

±30 V for voltage-clamp commands
±60 V for current-clamp commands

CALIBRATION SIGNAL

A pulse equal in magnitude to the setting on the thumbwheel switch is superimposed on the voltage and current outputs for the duration of a HIGH control signal on the CAL ACTIVATE input.

BATH POTENTIAL COMPENSATION

Signal recorded by bath headstage or by an external amplifier is automatically subtracted from the intracellular measurements. If bath potential is not measured the system automatically reverts to using 0 V as the reference potential. Standard headstages (HS-2) work as bath headstages when plugged into the bath headstage connector.

VIRTUAL-GROUND CURRENT MEASUREMENT

A VG-2 virtual-ground headstage can be plugged into the connector provided. The current measured is the sum of all currents into the preparation. The correct operation of the AXOCLAMP is not affected by the use or nonuse of virtual-ground current measurement.

REMOTE

Logic HIGH control signals activate BUZZ and CLEAR of each microelectrode, and select between BRIDGE, DCC, SEVC and TEVC modes. 15-pin connector.

MODEL CELL

A model cell is provided with the AXOCLAMP-2A. Electrodes are 50 MΩ. The cell is 50 MΩ // 500 pF. A switch grounds the electrodes directly (BATH mode) or through the cell (CELL mode). Special plugs connect directly to the headstages.

GROUNDING

Signal ground is isolated from the chassis and power ground.

CONTROL INPUTS

Above 3 V is accepted as logic HIGH. Below 2 V is accepted as logic LOW. Inputs are protected to ±15 V.

HEADSTAGE DIMENSIONS

Case is 2.25 x 1.14 x 0.87" (57.2 x 29.0 x 22.1 mm). Mounting rod is 4" (102 mm) long. Available mounting rod diameters are 1/4, 5/16 or 3/8" (6.3, 7.9 or 9.5 mm). Specify required mounting rod diameter with order. Input sockets for the microelectrode, shield and ground are 0.08" (2 mm) diameter. Cable length is 10 feet (3 m).

CASE DIMENSIONS

7" (177 mm) high, 19" (483 mm) wide, 12.5" (317 mm) deep. Mounts in standard 19" rack. Handles are included. Net weight 18 lbs (8 kgs).

SUPPLY REQUIREMENTS

Line voltage:	100-125 V_{ac} or 200-250 V_{ac}. User selectable by an internal switch.
Line Frequency:	50-60 Hz.
Power:	20 W.
Fuse:	0.5 A slow. 5 x 20 mm.
Line Filter:	RFI filter is included.
Line Cord:	Shielded line cord is provided.

ACCESSORIES PROVIDED

Operator's & Service Manuals
2 mm plugs for use with headstages
Low-capacitance test resistor for each headstage.
Spare globes for Mode switches
Spare fuse
Footswitches to operate Buzz of both electrodes
Clamp-1 Model Cell
Remote Buzz Duration hand-held control

OPTIONAL ACCESSORIES (not required for normal operation)

HS-4 Relay-Switched Headstage.

Miniature relay inside headstage automatically bypasses the current-measuring resistor during two-electrode voltage clamp mode. In all other modes HS-4 headstage behaves like an HS-2MG headstage with H = x1. Must be used in conjunction with a VG-2 virtual-ground headstage.

VG-2 virtual-ground headstage.

Measures total bath current. The virtual-ground output attenuation (VG) is available in three values (specify with order): x 0.1, x1 (standard), and x10. The output (I_{virt}) is 10 ÷ VG mV/nA.

ORDERING INFORMATION

When ordering please specify:

1. Current gain (H) of two headstages provided
2. Gain and type of any extra headstages
3. Diameter (D) of headstage mounting rods.

Unless you specify otherwise the AXOCLAMP-2A will be supplied with one HS-2L x1 and one HS-2L x 0.1 headstage, each with D= $^5/_{16}$" (7.9 mm).

DRAWING CONVENTIONS

SIGNAL IDENTIFICATION

→ CAL (ME2) — refers to a signal called CAL going to the ME2 section of the circuit.

CAL → (5V REF) — refers to a signal called CAL coming from the 5V REF section of the circuit.

SIGNAL NAMING

The same name may be used for related devices, signals and time periods. Logic signals are named to correspond to positive logic. Thus CYCLE ON is HI when the cycle is on and LO when the cycle is off. A bar over the name indicates the logic complement. In the text the bar is indicated by underlining. Thus <u>SEVC</u> is LO during SEVC mode and HI otherwise.

Signal names in square boxes appear on the front and rear panels.

COMPONENT VALUES

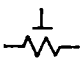
Electrical components shown on the diagrams are in the following units unless noted otherwise.

Capacitors: Values one or greater are in picofarads (pF)
Values less than one are in microfarads (uF)
Resistors: Ohms

SPECIAL SYMBOLS

SIGNAL —X— Jx-y — Indicates SIGNAL leaves circuit board at connector number x, pin y.

Relays and semiconductor switches are normally shown unenergized.


Trim potentiometer.


Panel potentiometer.

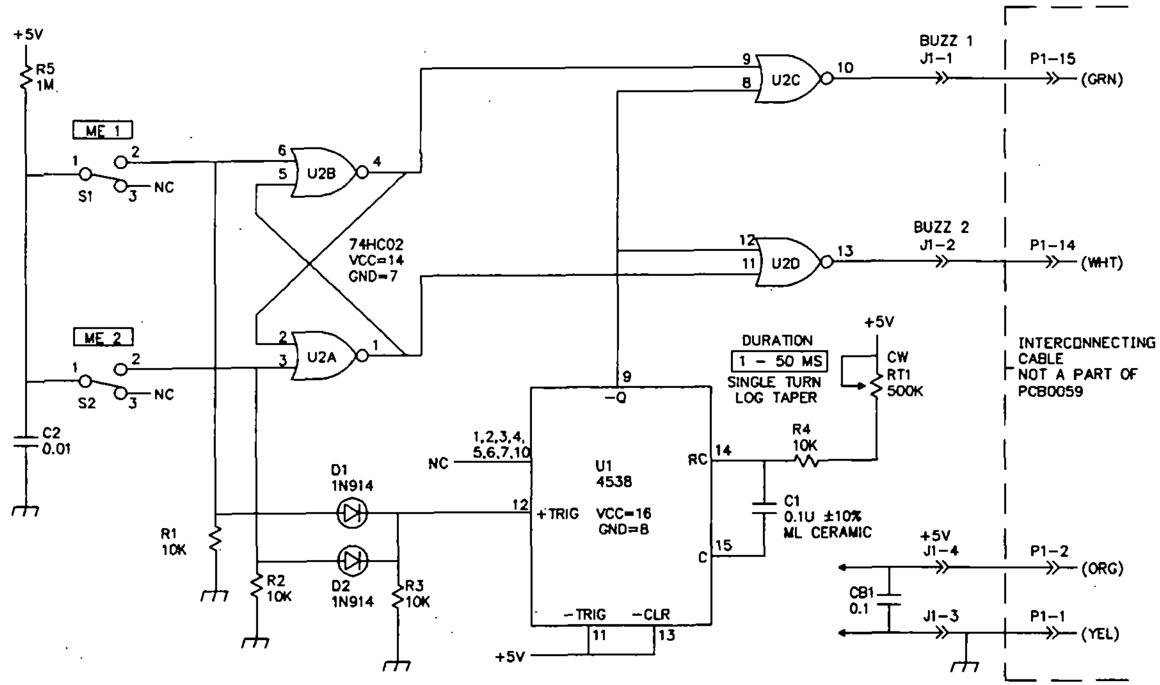
RESERVED WIRE COLORS

Orange: +5 V
Red: +15 V
Yellow: Signal ground
Blue: -15 V
Green: Digital ground

NOTES:

DATE PLOTTED: 11/27/89

REVISION RECORD			
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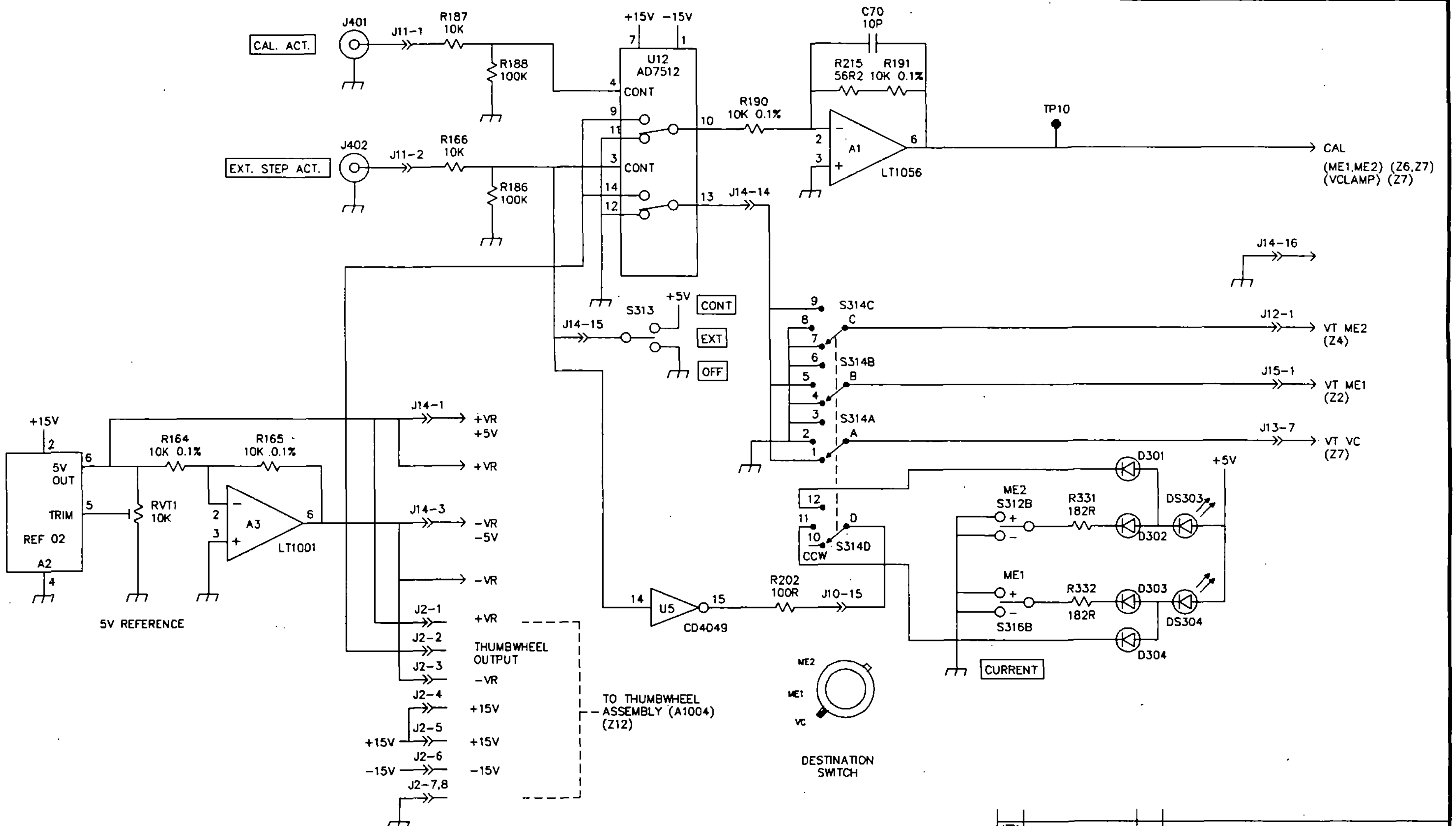


ITEM NO.	AXON PART NO.	QTY	NOMENCLATURE OR DESCRIPTION

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ENG	MARC PARON	06/17/89	
NEXT ASSY	USED ON		TITLE SCH, REMOTE BUZZ (ME1) (ME2) AXOCLAMP
	2270-023		
	3430-002		
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES: .XX ±0.02", .XXX ±0.010", ANGLES ±3° REMOVE ALL BURRS AND SHARP CORNERS, EDGES.	MATERIAL		SIZE B — AXON PART NO. 3435-002 — REV D
			SCALE: — \SCH\002 — SHEET 1 OF 1

NOTES:

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K	ADDED C82 AND R250 TO A20-D PER ECO # 365	04/11/89	jhn mrp
L	A9 OPAMP WAS LT101 (PAGE 4 OF 10) PER ECO #515.	08/08/90	JoAnna C.C.



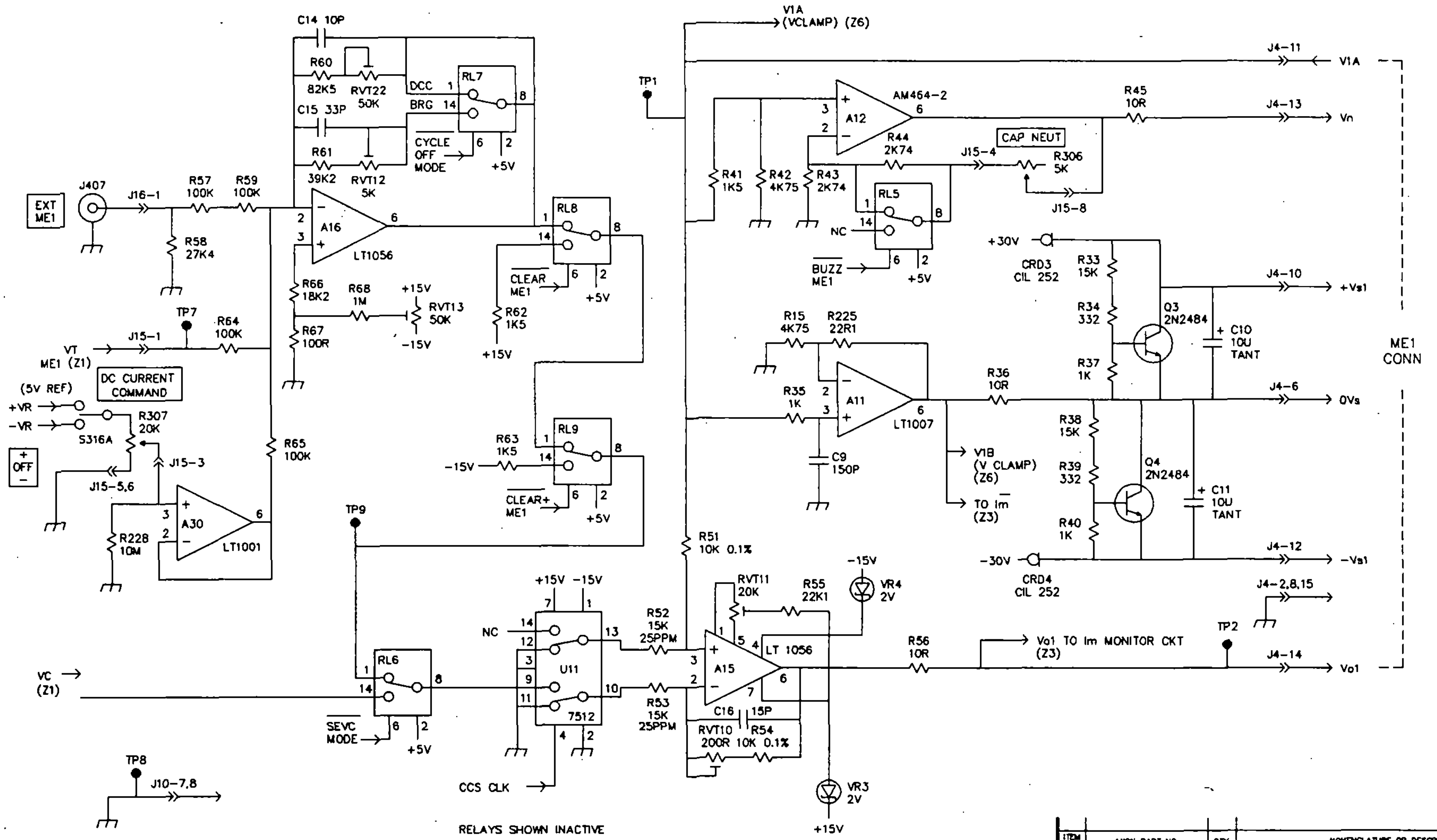
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PARTS LIST			

DWN	JoAnna H.N.	DATE 03/02/89	AXON INSTRUMENTS, INC.
ENG	MARC PARON	04/11/89	
NEXT ASSY: 2270-024	USED ON: AXOCLAMP-2A, 3430-001		TITLE: SCH, 5V REF. DESTINATION SWITCH AXOCLAMP-2A MAIN
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES: .XX ±0.02", .XXX ±0.010", ANGLES ±3° REMOVE ALL BURRS AND SHARP CORNERS, EDGES	MATERIAL	SIZE C	AXON PART NO. 3435-001, REV L
		SCALE: —	\SCH\001A, SHEET 1 OF 10

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NOTES:

REVISION RECORD			
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	SEE SHEET 1		



ITEM NO.	AXON PART NO.	QTY	NOMENCLATURE OR DESCRIPTION
PARTS LIST			

DWN	JoAnna H.N.	DATE 03/02/89
ENG	MARC PARON	04/11/89

AXON INSTRUMENTS, INC.

NEXT ASSY	USED ON
2270-024	AXOCLAMP-2A
	3430-001

TITLE HEADSTAGE DRIVE CKT (ME1)
AXOCLAMP-2A MAIN

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES: .XX ±0.02" .XXX ±0.010" ANGLES ±3° REMOVE ALL BURRS AND SHARP CORNERS. EDGES.

MATERIAL

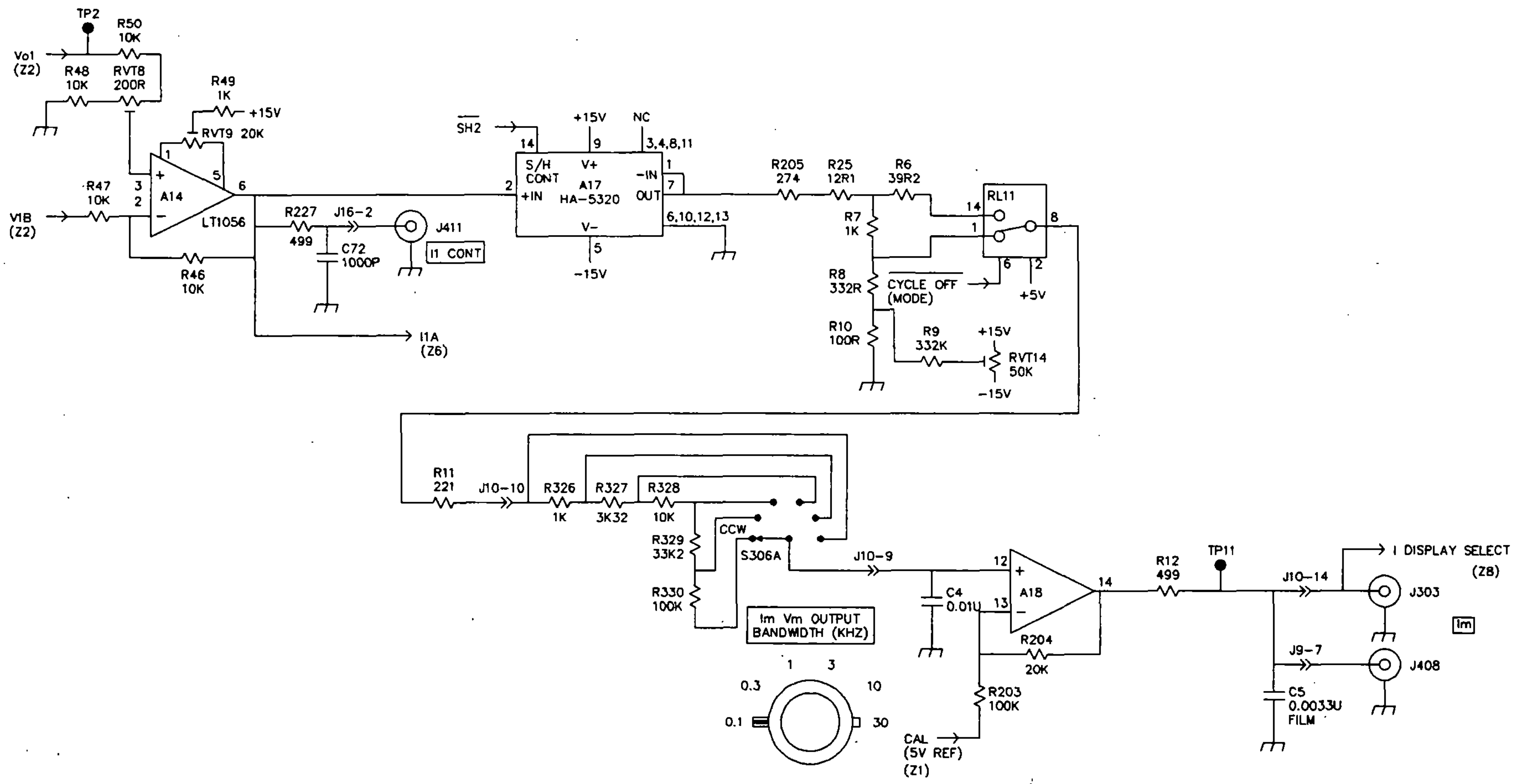
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NOTES:

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REV	DESCRIPTION OF CHANGE	DATE	APPROVED
	SEE SHEET 1		



ITEM NO.	AXON PART NO.	QTY	NOMENCLATURE OR DESCRIPTION

PARTS LIST

DWN	JoAnna H.N.	DATE 03/02/89	AXON INSTRUMENTS, INC.
ENG	MARC PARON	04/11/89	
NEXT ASSY	USED ON		TITLE
2270-024	AXOCLAMP-2A		Im MONITOR CKT AXOCLAMP-2A
	3430-001		

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES: .XX ±0.02" .XXX ±0.010" ANGLES ±3° REMOVE ALL BURRS AND SHARP CORNERS, EDGES.

MATERIAL

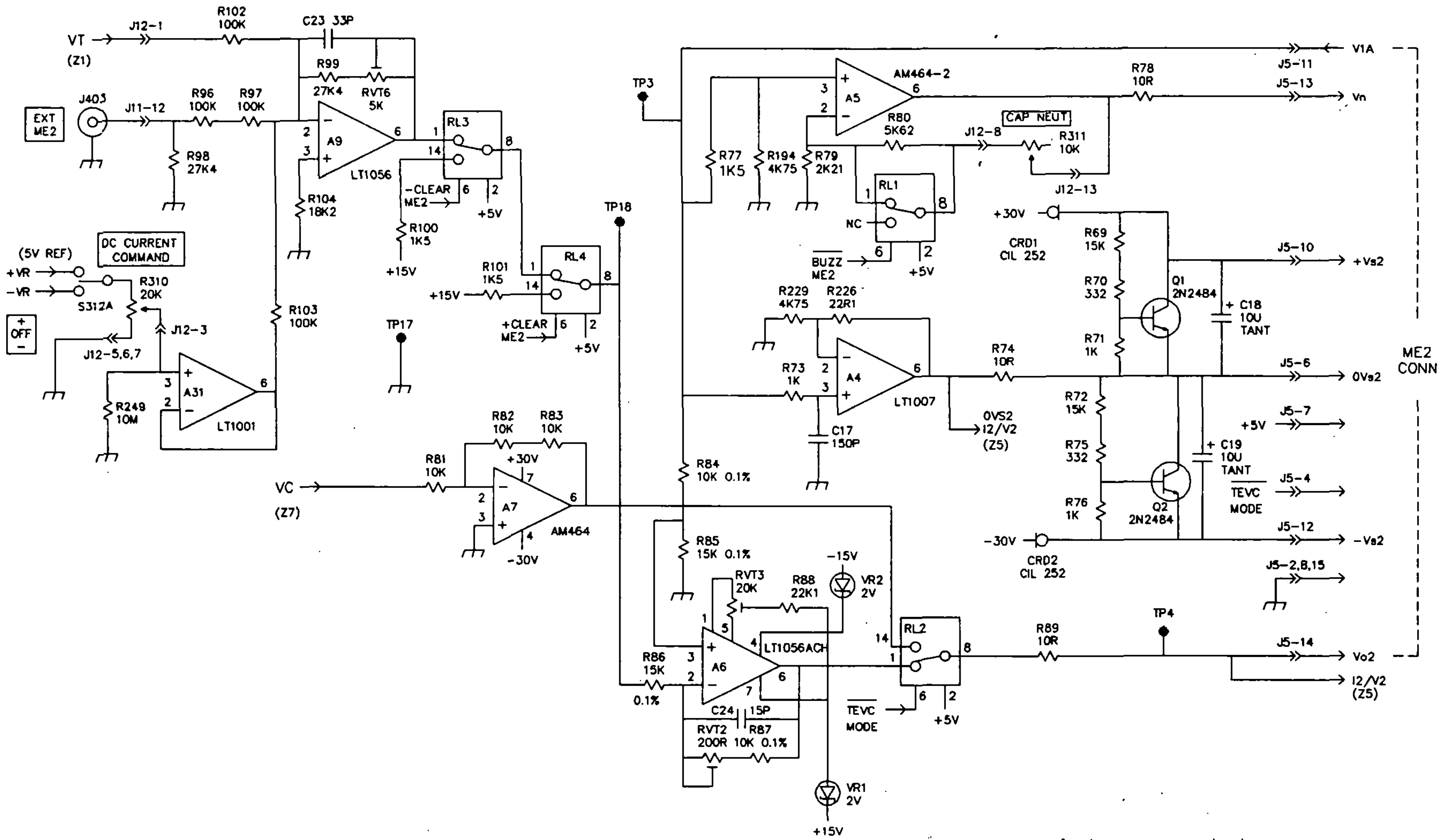
SIZE	AXON PART NO.	REV
C	3435-001	L

SCALE: — \SCH\001C SHEET 3 OF 10

Plotted 06-08-90 18:05

NOTES:

REVISION RECORD			
REV	DESCRIPTION OF CHANGE	DATE	APPROVED
	SEE SHEET 1		



ITEM NO.	AXON PART NO.	QTY	NOMENCLATURE OR DESCRIPTION

PARTS LIST

DWN	JoAnna H.N.	DATE 03/02/89	AXON INSTRUMENTS, INC.
ENG	MARC PARON	04/11/89	
NEXT ASSY	USED ON	TITLE	CURRENT COMMAND & HEADSTAGE DRIVE CKT (ME2)
2270-024	AXOCLAMP-2A		
	3430-001		

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES: .XX ±0.02" .XXX ±0.010", ANGLES ±3° REMOVE ALL BURRS AND SHARP CORNERS, EDGES.

MATERIAL

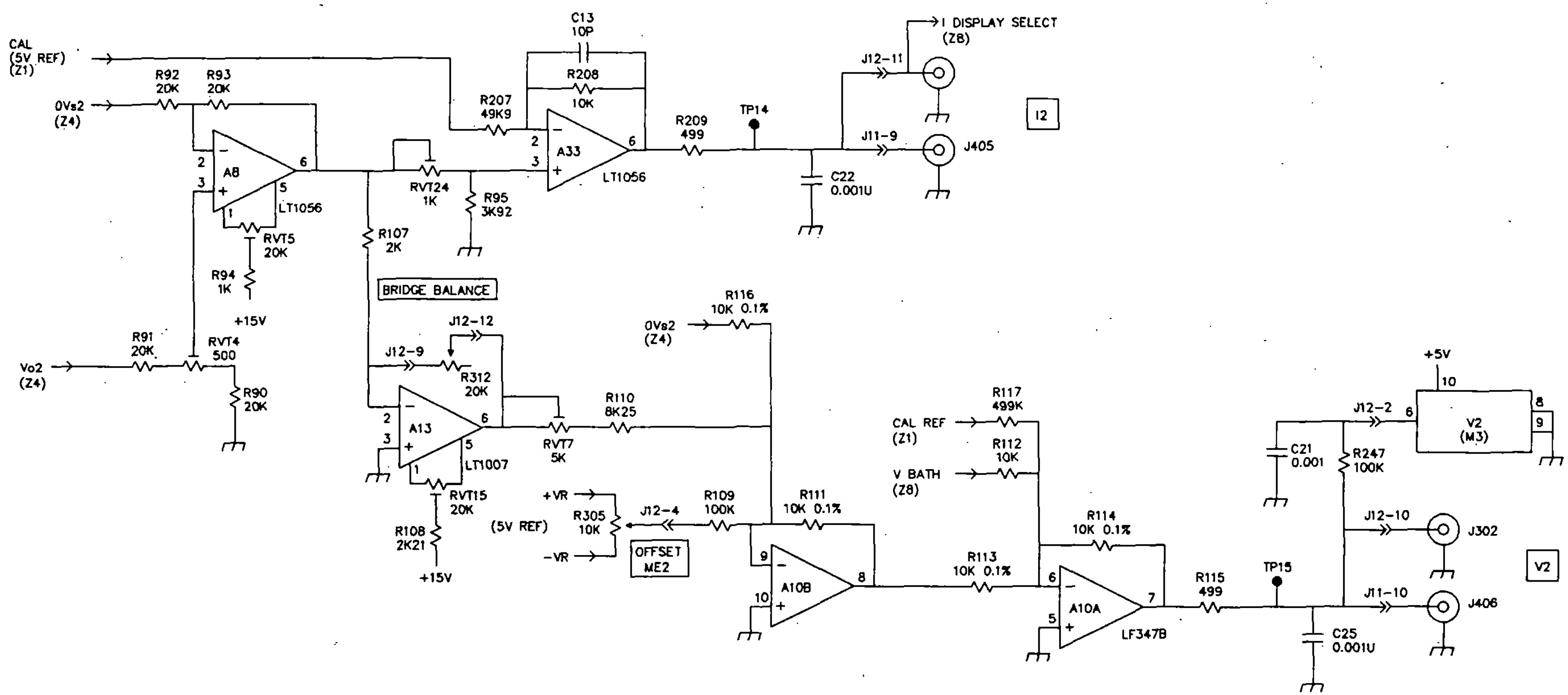
SIZE C | AXON PART NO. 3435-001 | REV L

SCALE: — | \SCH\001D | SHEET 4 OF 10

Plotted 06-08-90 18:08

NOTES:

REV	DESCRIPTION OF CHANGE	DATE	APPROVED
	SEE SHEET 1		



ITEM NO.	AXON PART NO.	QTY	NOMENCLATURE OR DESCRIPTION

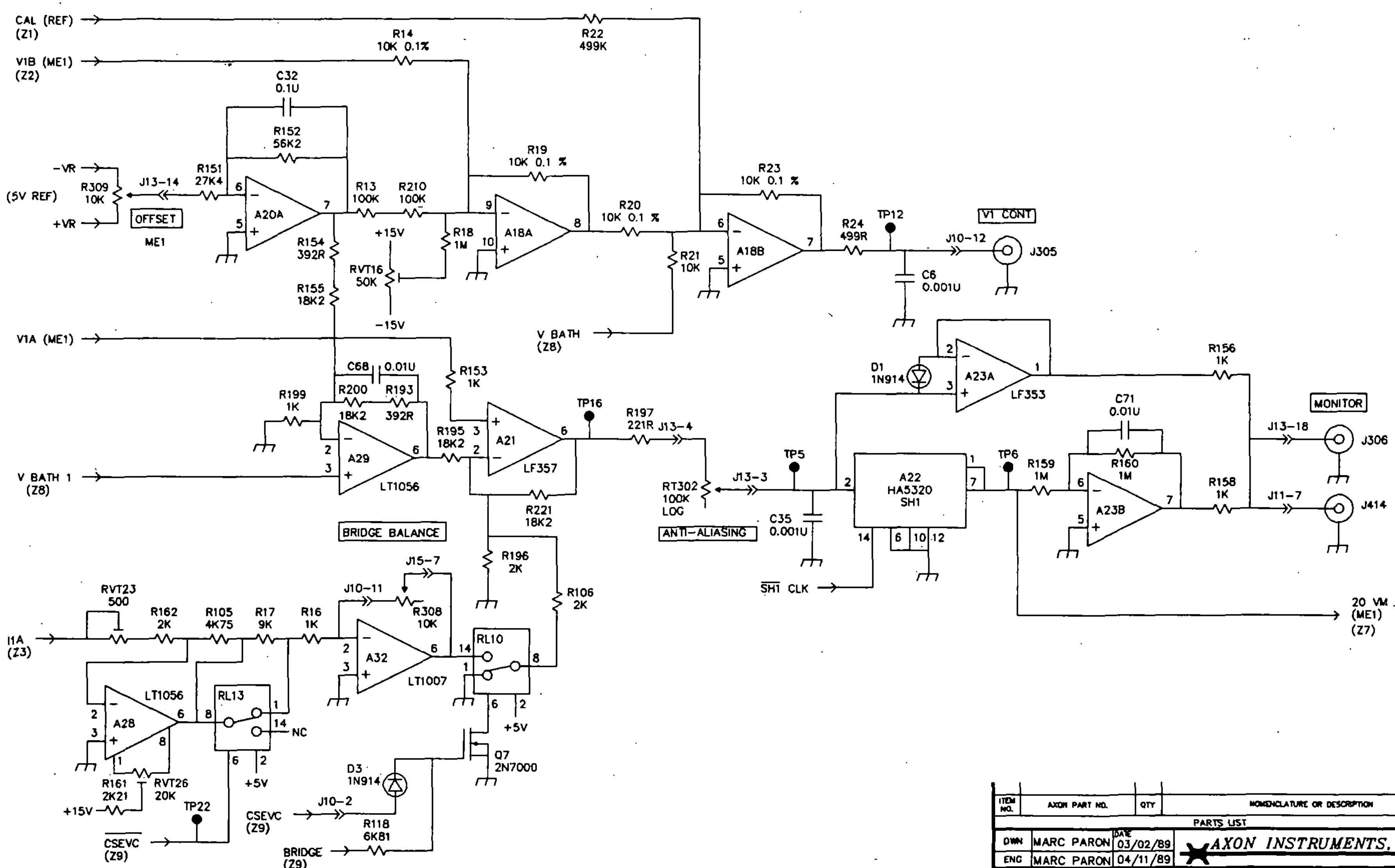
PARTS LIST

DWN	MARC PARON	DATE 03/02/89	AXON INSTRUMENTS, INC.
ENG	MARC PARON	04/11/89	
NEXT ASSY	USED ON	TITLE	I_2 / V_2 (ME2) AXOCLAMP-2A MAIN
2270-024	AXOCLAMP-2A		
	3430-001		
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES: .XX ±0.02" .XXX ±0.010" ANGLES ±.5° REMOVE ALL BURRS AND SHARP CORNERS, EDGES	MATERIAL	SIZE C	AXON PART NO. 3435-001 REV L
		SCALE: —	\SCH\001E SHEET 5 OF 10

Plotted 06-08-90 18:10

NOTES:

REVISION RECORD			
REV	DESCRIPTION OF CHANGE	DATE	APPROVED
	SEE SHEET 1		



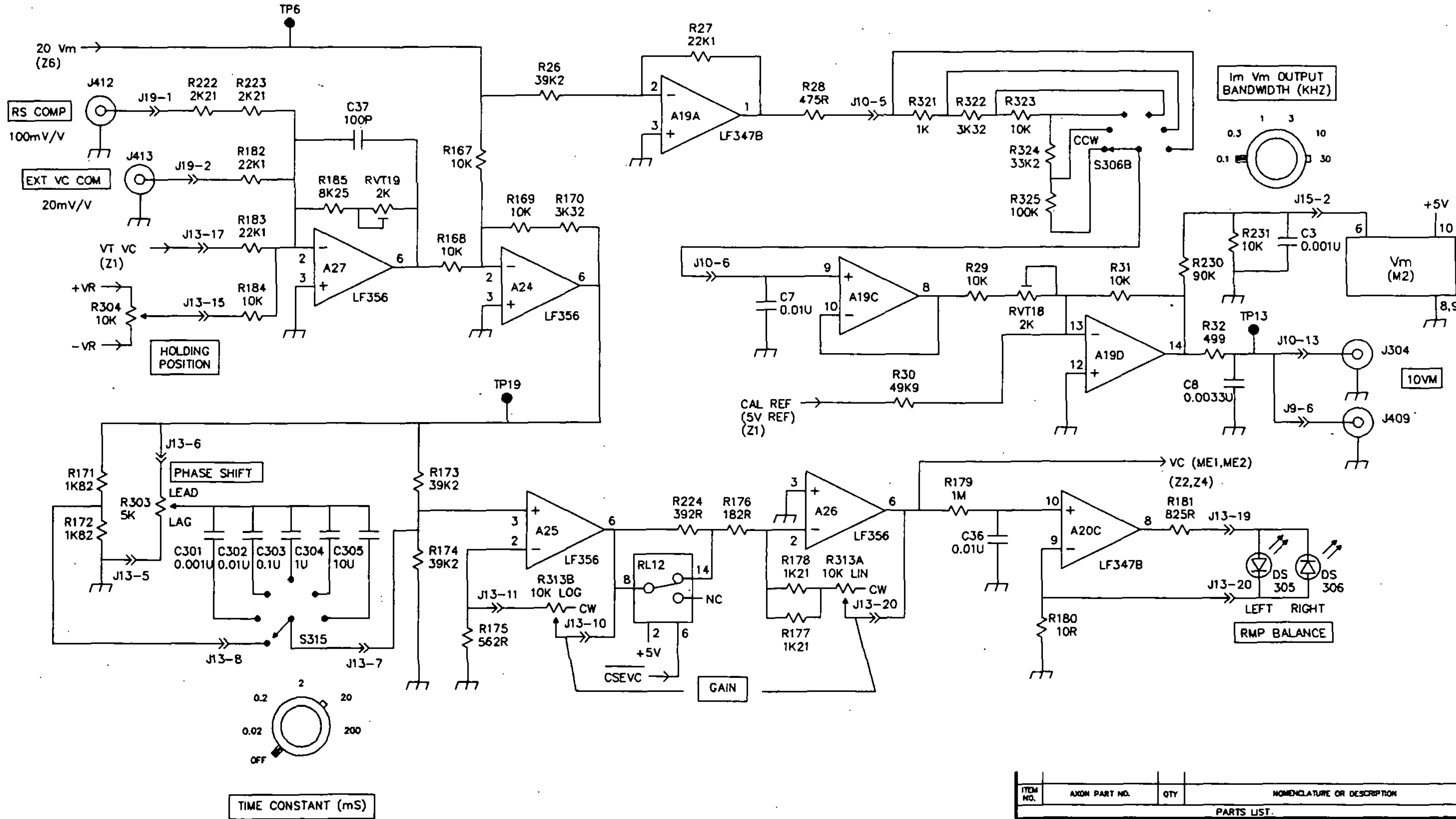
ITEM NO.	AXON PART NO.	QTY	NOMENCLATURE OR DESCRIPTION
PARTS LIST			

DWN	MARC PARON	DATE 03/02/89	AXON INSTRUMENTS, INC.
ENG	MARC PARON	04/11/89	
NEXT ASSY	USED ON	TITLE	BRIDGE BALANCE MONITOR & V1 CONTINUOUS
2270-024	AXOCLAMP-2A		
	3430-001		
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES: .XX ±0.02", .XXX ±0.010", ANGLES ±3° REMOVE ALL BURRS AND SHARP CORNERS, EDGES	MATERIAL	SIZE C	AXON PART NO. 3435-001 REV L
		SCALE: —	\SCH\001F SHEET 6 OF 10

Plotted 06-08-90 18:12

NOTES:

REVISION RECORD			
REV	DESCRIPTION OF CHANGE	DATE	APPROVED
	SEE SHEET 1		



ITEM NO.	AXON PART NO.	QTY	NOMENCLATURE OR DESCRIPTION

PARTS LIST

DWN	MARC PARON	DATE 03/02/89
ENG	MARC PARON	04/11/89
NEXT ASSY	USED ON	
2270-024	AXOCLAMP-2A	
	3430-001	

AXON INSTRUMENTS, INC.

TITLE VOLTAGE CLAMP AND V1 CONTINUOUS

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES: .XX ±0.02" .XXX ±0.010", ANGLES ±.5° REMOVE ALL BURRS AND SHARP CORNERS, EDGES.

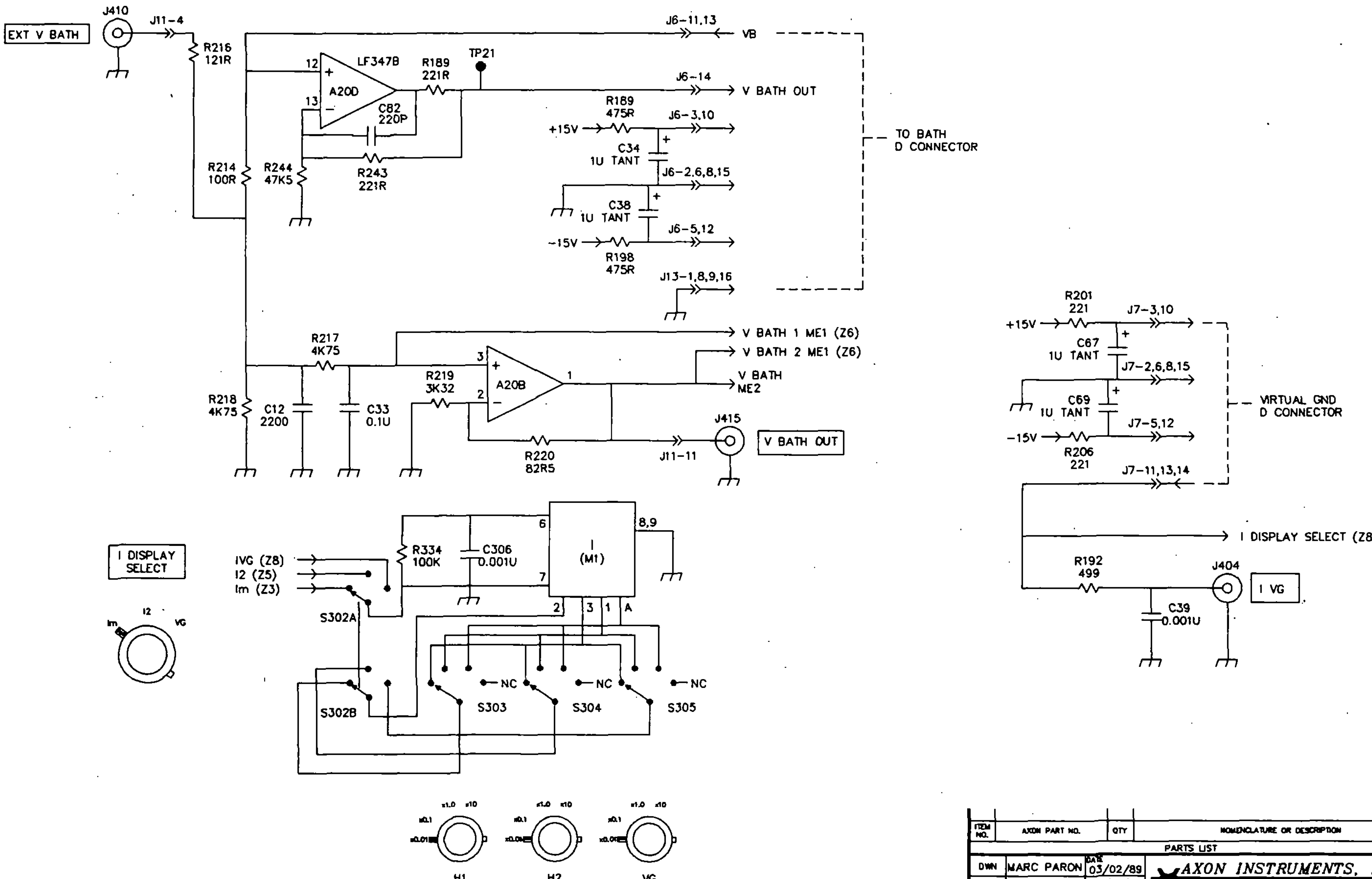
MATERIAL

SIZE	AXON PART NO.	REV
C	3435-001	L
SCALE: —	\SCH\001G	SHEET 7 OF 10

Plotted 06-08-90 18:14

NOTES:

REVISION RECORD			
REV	DESCRIPTION OF CHANGE	DATE	APPROVED
	SEE SHEET 1		



ITEM NO.	AXON PART NO.	QTY	NOMENCLATURE OR DESCRIPTION

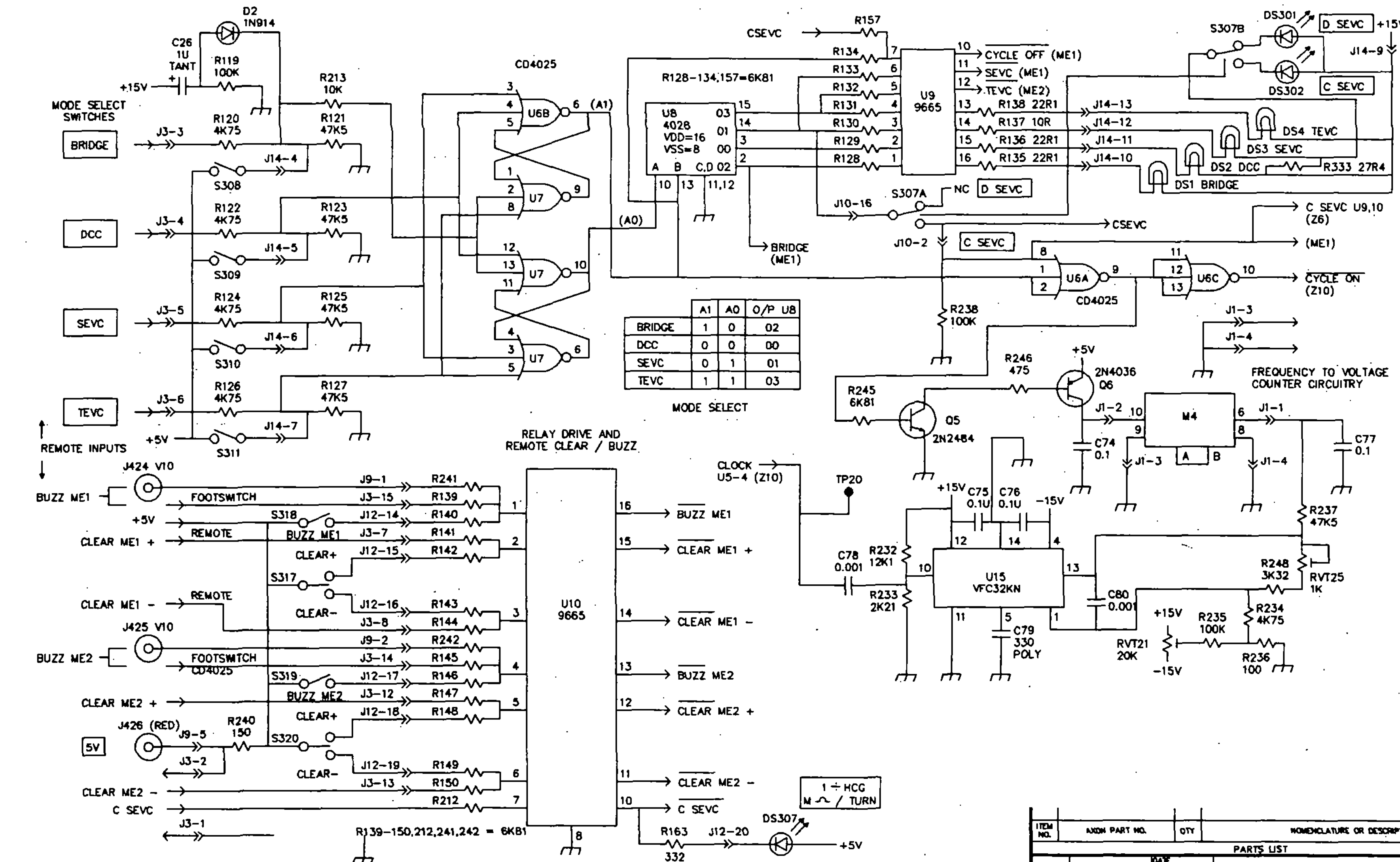
PARTS LIST

DWN	MARC PARON	DATE 03/02/89	AXON INSTRUMENTS, INC.
ENG	MARC PARON	04/11/89	
NEXT ASSY	USED ON	TITLE	I DISPLAY SELECT V_{BATH} & VIRTUAL GROUND
2270-024	AXOCLAMP-2A 3430-001		
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES .XX ±0.02" .XXX ±0.010" ANGLES ±3° REMOVE ALL BURRS AND SHARP CORNERS, EDGES	MATERIAL	SIZE C	AXON PART NO. 3435-001 REV L
		SCALE: —	\SCH\001H SHEET 8 OF 10

Plotted 06-08-90 18:16

NOTES:

REVISION RECORD			
REV	DESCRIPTION OF CHANGE	DATE	APPROVED
	SEE SHEET 1		



	A1	A0	O/P U8
BRIDGE	1	0	02
DCC	0	0	00
SEVC	0	1	01
TEVC	1	1	03

MODE SELECT

ITEM NO.	AXON PART NO.	QTY	NOMENCLATURE OR DESCRIPTION

PARTS LIST

DWN	MARC PARON	03/02/89
ENG	MARC PARON	04/11/89

AXON INSTRUMENTS, INC.

NEXT ASSY	USED ON
2270-024	AXOCLAMP-2A
	3430-001

TITLE: REMOTE INPUT AND CONTROL LOGIC

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES: .XX ±0.02" .XXX ±0.010" ANGLES ±3° REMOVE ALL BURRS AND SHARP CORNERS, EDGES

MATERIAL

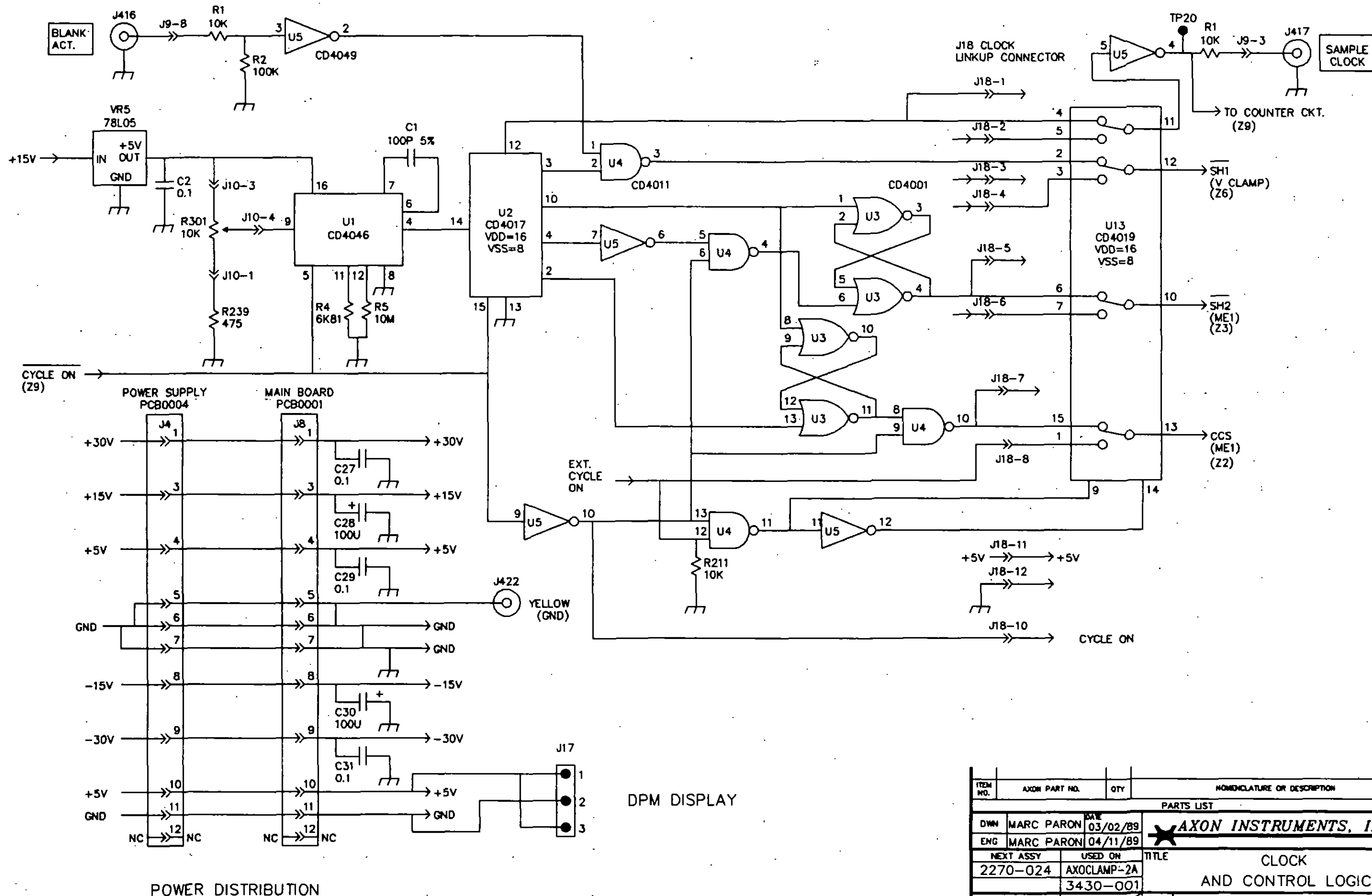
SIZE C | AXON PART NO. 3435-001 | REV L

SCALE: — | \SCH\001I | SHEET 9 OF 10

Plotted 06-08-90 18:18

NOTES:

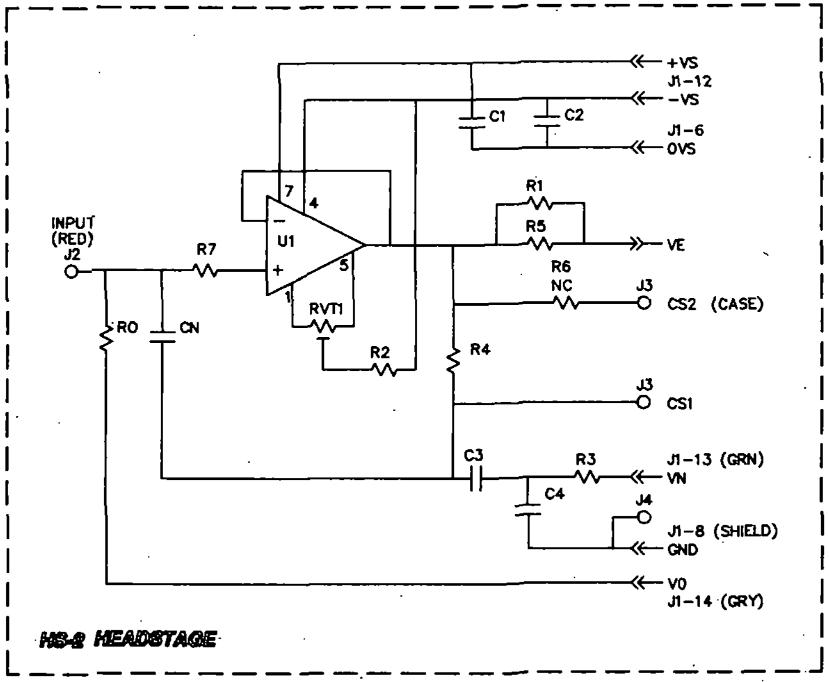
REVISION RECORD			
REV	DESCRIPTION OF CHANGE	DATE	APPROVED
	SEE SHEET 1		



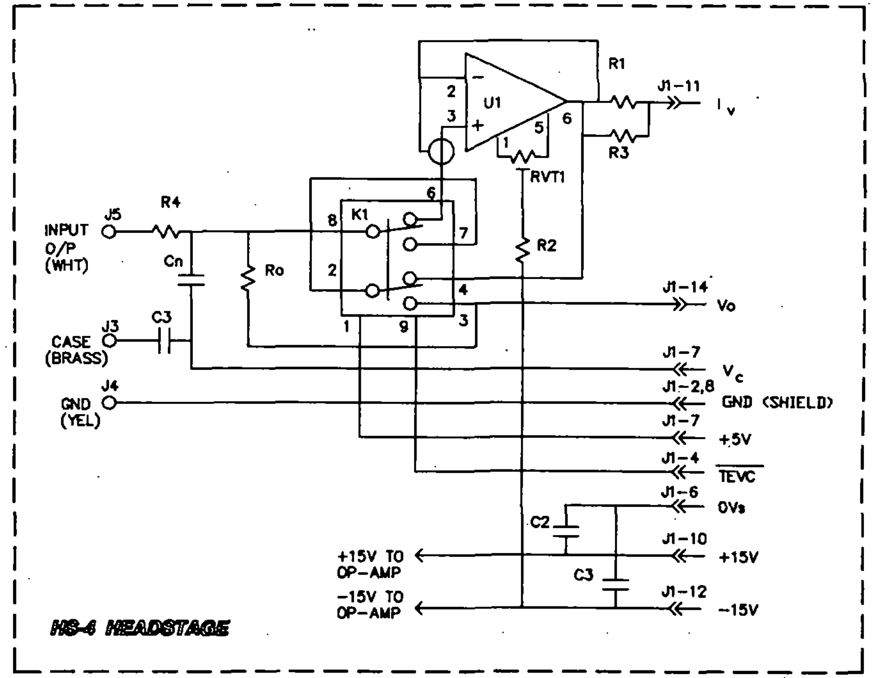
ITEM NO.	AXON PART NO.	QTY	NOMENCLATURE OR DESCRIPTION
PARTS LIST			

DWN	MARC PARON	DATE 03/02/89	AXON INSTRUMENTS, INC.
ENG	MARC PARON	04/11/89	
NEXT ASSY	USED ON	TITLE	CLOCK AND CONTROL LOGIC
2270-024	AXOCLAMP-2A		
	3430-001		
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES: .XX ±0.02" .XXX ±0.010" ANGLES ±3° REMOVE ALL BURRS AND SHARP CORNERS, EDGES	MATERIAL	SIZE C	AXON PART NO. 3435-001 REV L
SCALE:		SCH\001J	SHEET 10 OF 10

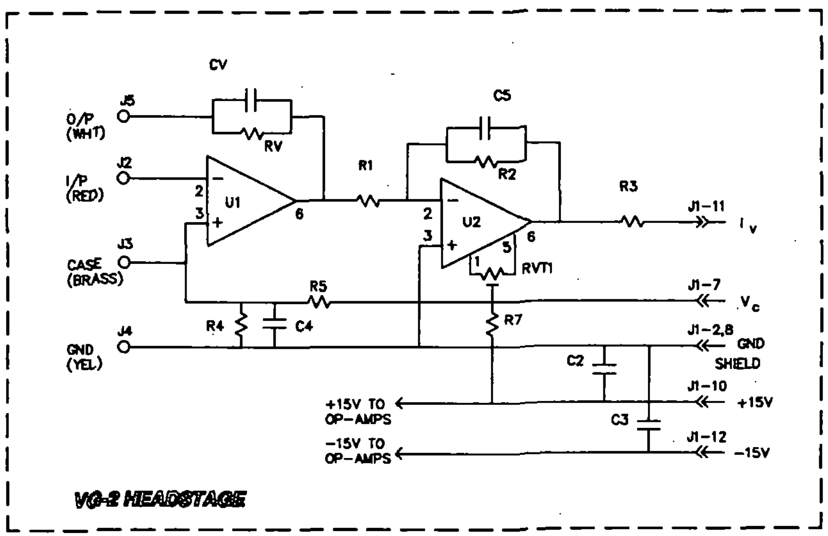
Plotted 06-08-90 18:21



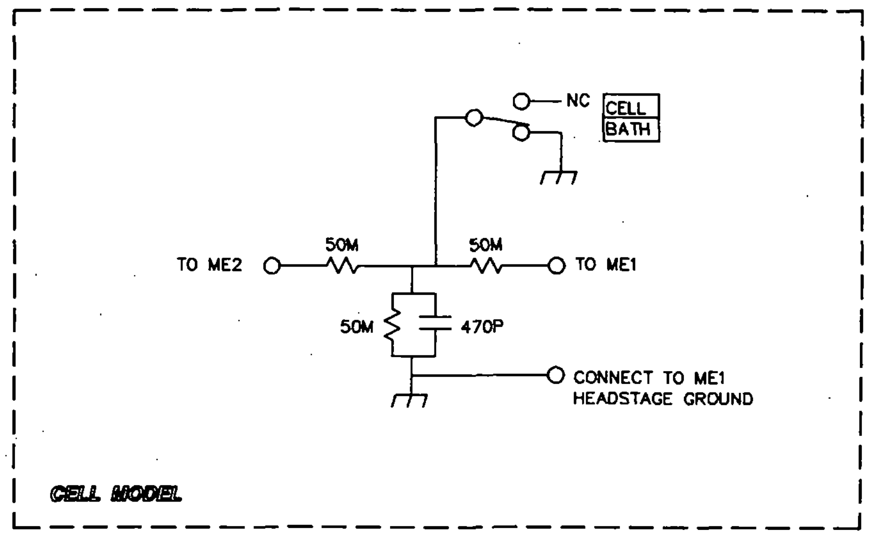
HS-2 HEADSTAGE



HS-4 HEADSTAGE



VG-2 HEADSTAGE



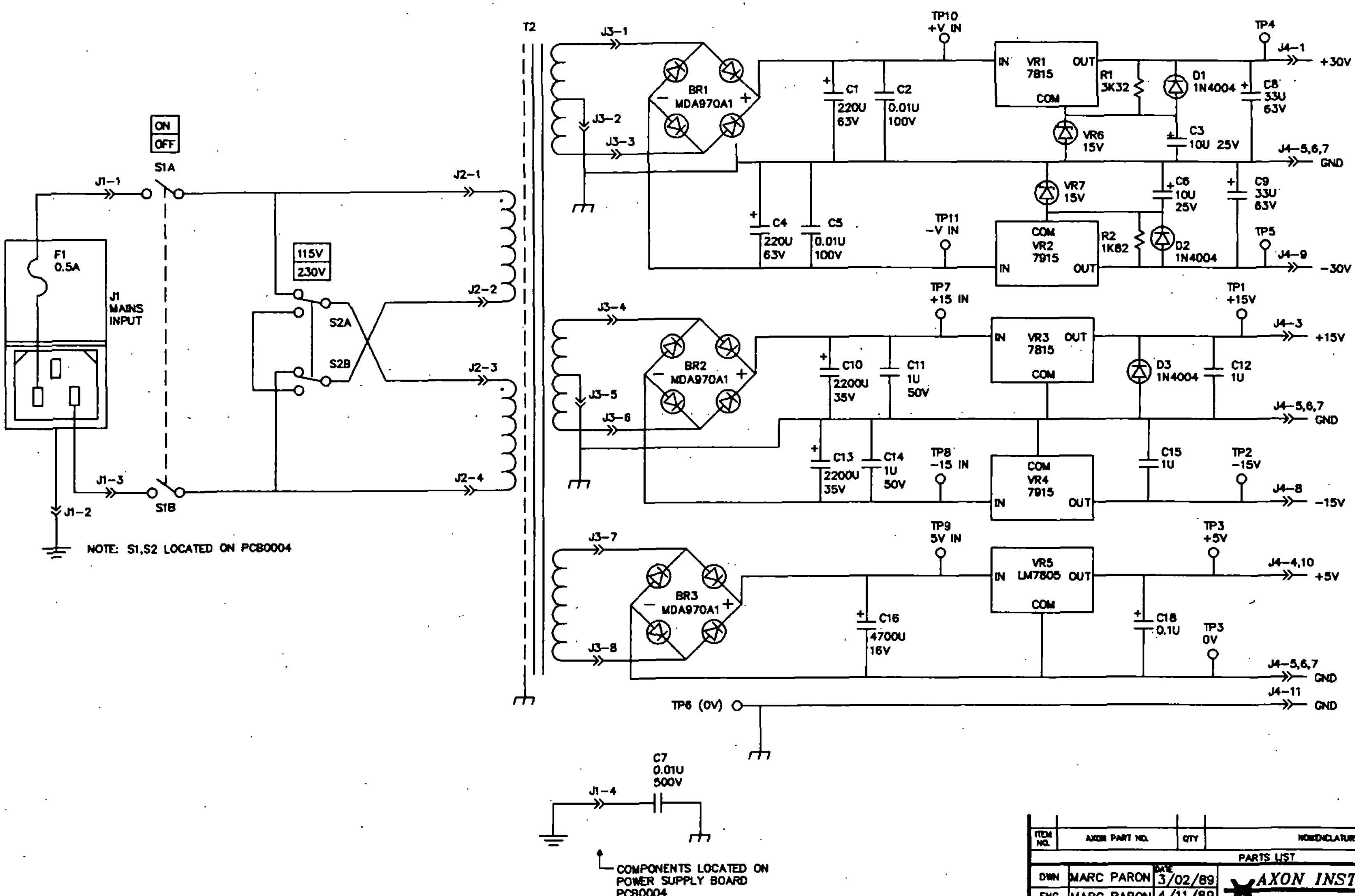
CELL MODEL

HEADSTAGE AND MODEL CELL CONFIGURATION

\SCH\001L.dwg

NOTES:

REVISION RECORD			
REV	DESCRIPTION OF CHANGE	DATE	APPROVED
F	REDRAWN & UPDATED DWG PER AXON'S CURRENT STD/ ECO# 303	4/06/89	



ITEM NO.	AXON PART NO.	QTY	NOMENCLATURE OR DESCRIPTION

PARTS LIST

		DATE	
DWN	MARC PARON	3/02/89	AXON INSTRUMENTS, INC.
ENG	MARC PARON	4/11/89	
NEXT ASSY	USED ON	TITLE	SCH, POWER SUPPLY AXOCLAMP-2A
	AXOCLAMP-2A		
	3430-005		

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES .XX ±0.02", .XXX ±0.010", ANGLES ±3° REMOVE ALL BURRS AND SHARP CORNERS, EDGES.

MATERIAL

SIZE	AXON PART NO.	REV
C	3435-005-01	E

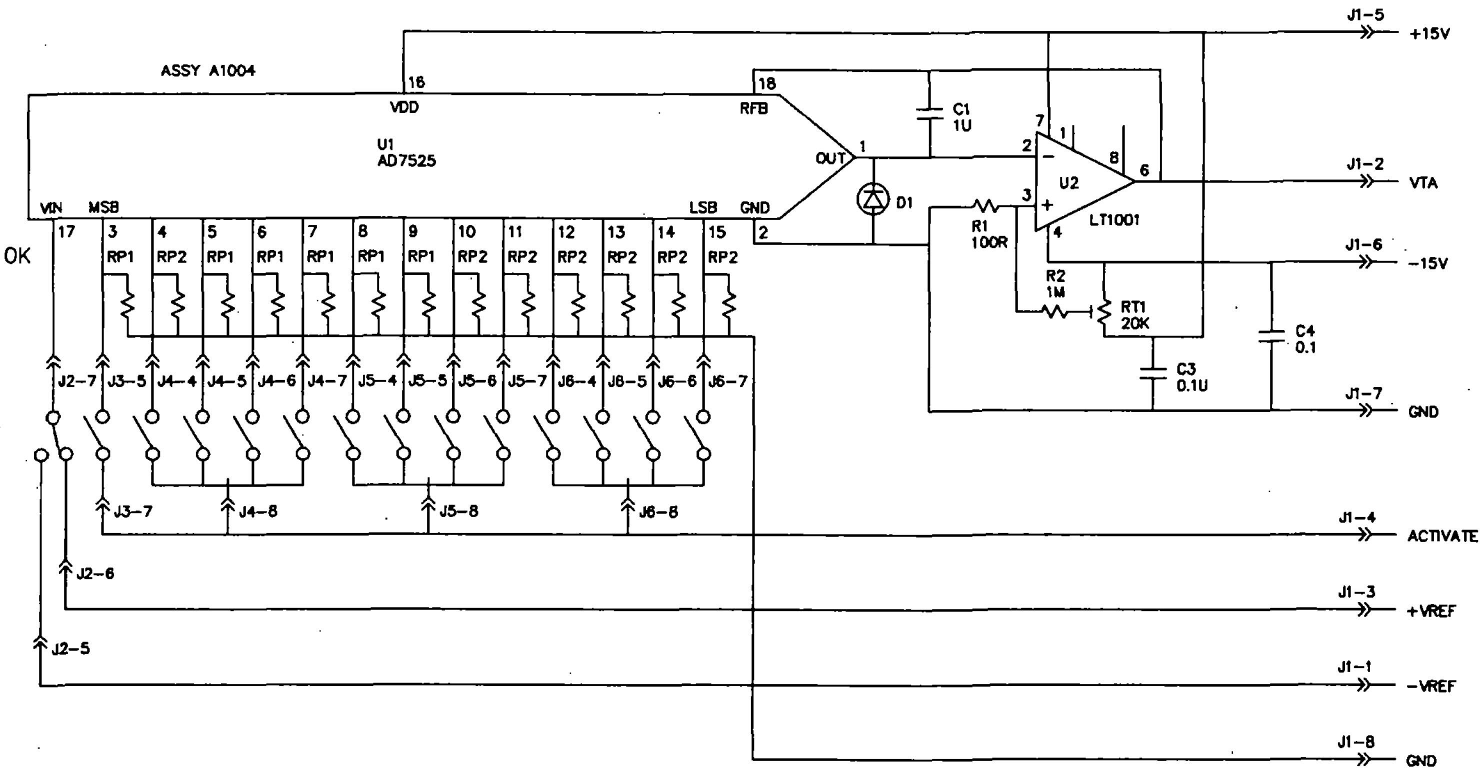
SCALE: — \SCH\005-01 SHEET 1 OF 1

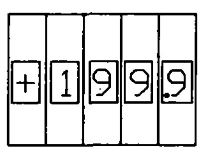
Plotted 04-19-90 13:13

NOTES:

REVISION RECORD			
REV	DESCRIPTION OF CHANGE	DATE	APPROVED
B	REDRAWN & UPDATED DWG PER AXON'S CURRENT STANDARD / ECO # 303	4/06/89	jhn m.p.
C	UPGRADED AXOPATCH-1C TO BECOME AXOPATCH-1D; NO CHANGES APPLIED TO SCHEMATIC DWG PER ECO # 370.	5/08/89	jhn m.p.
D	REMOVED C2/NC PER ECO #506.	5/07/90	[illegible]

RESISTOR PACK RP1,RP2 10K





COMPONENTS LOCATED BEHIND THUMBWHEEL SWITCH ON 3430-004

ITEM NO.	AXON PART NO.	QTY	NOMENCLATURE OR DESCRIPTION

PARTS LIST

DWN	BERNARD B.	DATE 05/12/87	AXON INSTRUMENTS, INC.
ENG	BERNARD B.	06/11/87	
NEXT ASSY	USED ON		TITLE SCH, THUMBWHEEL TO-VOLTAGE CONVERTER
	2270-034		
	3430-004		
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES: .XX ±0.02" .XXX ±0.010" ANGLES ±3° REMOVE ALL BURRS AND SHARP CORNERS, EDGES	MATERIAL		SIZE C · AXON PART NO. 3435-004 · REV E
			SCALE: — · \SCH\004 · SHEET 1 OF 1

Plotted 05-07-90 17:27

ADJUSTMENT PROCEDURE

ABBREVIATIONS

CMRR; common-mode rejection ratio
TP; test point
V_{p-p}; volts peak-to-peak
gnd; ground
H; headstage current gain
scope; cathode ray oscilloscope
DVM; digital volt meter
DPM; digital panel meter

EQUIPMENT REQUIRED

Differential-input scope with 50 μV/div resolution
DVM
Square-wave generator
Frequency meter

TRIM PROCEDURE

It is important to do the trims in the order presented because some of them rely on earlier trims. For brevity, only changes to the previous setup are listed for each trim.

MEASUREMENT TECHNIQUES

Measuring 0 V. You will be asked to trim for 0 V differentially, e.g. across TP7 - TP8. First connect both probes from the scope to the ground point (the second mentioned test point, in this example TP8) to establish 0 V. Next connect the probes separately to the two test points and make the requested trim.

Filtering. When measuring zero volts or establishing a null the input to the scope should be lowpass filtered at 10 kHz or less.

Measuring DC voltages. To eliminate offset errors from the measurement all of these measurements will be balanced. That is, the command potential will be switched alternately from +ve to -ve and the difference in the measured outputs will be measured. Connect DVM ground to yellow ground plug at rear of unit.

H. Some measurements require a x1 headstage and a 10 MΩ 1% resistor. If you do not have a x1 headstage a x0.1 headstage can be used with a 100 MΩ 1% resistor.

1. Counter
Connect frequency meter to TP20
Set Rate pot for about 500 Hz on frequency meter
[ ] Trim RVT21 for same reading on panel counter
Set Rate pot for about 50 kHz on frequency meter
[ ] Trim RVT25 for same reading on panel counter

2. Thumbwheel-to-voltage offset
Bridge mode
On scope measure TP7(VT) - TP8(gnd) at 100 μV/div
Externally activate thumbwheel at 100 Hz
Destination ME1
Thumbwheel on 000.0
[ ] Adjust trim pot on back of thumbwheel for a null

3. 5V REF accuracy
Bridge mode
Using the DVM monitor TP7(VT ME1)
Thumbwheel on 100.0 continuous
Repetitively switch from +100.0 to -100.0
[ ] Trim RVT1 for 10.000 V difference

4. CCS1 CMRR
Thumbwheel on 000.0 external
ME1 current-clamp command off
Plug in x1 headstage
Connect a 1 V_{p-p} 100 Hz square wave directly to the headstage input.
On scope measure TP2(Vo1) - source voltage at 100 μV/div
[ ] Trim RVT10 for a null

5. Im CMRR
On scope measure TP11(Im) - TP8(gnd) at 100 μV/div
[ ] Trim RVT8 for a null

6. ME1 COM gain
Remove headstage
Link pins 8(gnd) and 11(V1a) with a 22 Ω resistor
Using the DVM monitor TP2(Vo1)
Thumbwheel on 100.0 continuous
Repetitively switch from +100.0 to -100.0
DCC mode 1 kHz
[ ] Trim RVT22 for 2.000 V difference
Bridge mode
[ ] Trim RVT12 for 2.000 V difference

7. Im DPM accuracy
Bridge mode
Thumbwheel on 100.0 continuous
Repetitively switch from +100.0 to -100.0
[ ] Adjust trim pot inside Im DPM to read ±1.000

8. ME1 COM offset
Thumbwheel on 000.0 external
DCC mode, minimum cycling rate
On scope measure TP2(Vo1) - TP8(gnd) at 50 μV/div
[ ] Trim RVT13 for no step during the cycle

9. CCS1 offset
Bridge mode
[ ] Trim RVT11 for 0 V

10. Im Bridge offset
On scope measure TP11(Im) - TP8(gnd) at 100 μV/div
[ ] Trim RVT9 for 0 V

11. Im DCC offset
DCC mode, 10 kHz
Set Vm,Im output bandwidth to 0.1 kHz
[ ] Trim RVT14 for 0 V

[ ] [ ] Repeat 9. and 10.

12. Headstage offset
Bridge mode
On scope measure TP1(V1a) - TP8(gnd) at 100 μV/div
Plug headstage into ME1 slot
Ground via resistor of value 10 MΩ ÷ H
Wait 5 min after plugging in headstage
[ ] Adjust trim pot inside headstage till there is no shift when the grounding resistor is replaced by a resistor of value 1 MΩ ÷ H
[ ] Repeat for other headstages

13. ME1 Bridge Balance accuracy
On scope measure TP13(10.Vm) - TP8(gnd) at 20 mV/div
Plug in x1 headstage
Ground via 10 MΩ, 1% or better
Set Bridge Balance ME1 to indicate 10 MΩ
Externally activate thumbwheel at 100 Hz
Thumbwheel on 050.0
[ ] Trim RVT23 for a null

14. ME1 Bridge offset
Switch step command off
Use Offset control to center trace on screen
[ ] Trim RVT26 so that trace does not shift as Bridge pot increased to maximum

15. 10.Vm accuracy
Set Bridge Balance ME1 to indicate 0 MΩ
Using the DVM monitor TP12(V1)
Thumbwheel on 050.0 continuous
Repetitively switch from +050.0 to -050.0
Make a note of the total voltage change
Using the DVM monitor TP13(10.Vm)
[ ] Trim RVT18 so change in 10.Vm is ten times change in V1

16. Vm DPM accuracy
Repetitively switch from +050.0 to -050.0
[ ] Adjust trim pot inside Vm DPM to read same as DVM

17. V1 offset
Thumbwheel on 000.0 external
On scope measure TP13(10.Vm) - TP8(gnd) at 20 mV/div
Set ME1 Input Offset for 0 V
On scope measure TP12(V1) - TP8(gnd) at 2 mV/div
[ ] Trim RVT16 for 0 V

18. CCS2 CMRR
Bridge mode
ME2 current-clamp command off
Plug x1 headstage into ME2 slot
Connect a 1 V_{p-p} 100 Hz square wave directly to the headstage input
On scope measure TP4(Vo2) - source voltage at 100 μV/div
[ ] Trim RVT2 for a null

19. I2 CMRR
On scope measure TP14(I2) - TP17(gnd) at 100 μV/div
[ ] Trim RVT4 for a null

20. ME2 COM gain
Remove headstage
Link pins 8(gnd) and 11(V2a) with a 22 Ω resistor
Using a DVM monitor TP4(Vo2)
Thumbwheel on 100.0 continuous
Destination ME2
Repetitively switch from +100.0 to -100.0
[ ] Trim RVT6 for 2.000 V difference

21. CCS2 offset
Thumbwheel on 000.0 OFF
On scope measure TP4(Vo1) - TP17(gnd) at 50 μV/div
[ ] Trim RVT3 for 0 V

AXOCLAMP SERVICE, COPYRIGHT FEBRUARY 1990, AXON INSTRUMENTS, INC.

22. I2 offset
On scope measure TP14(Im) - TP17(gnd) at 100 μV/div
[ ] Trim RVT5 for 0 V

23. I2 accuracy
Thumbwheel on 100.0 continuous
Repetitively switch from +100.0 to -100.0
[ ] Trim RVT24 for ±1.000 on DPM (select I2)

24. ME2 Bridge Balance accuracy
On scope measure TP15(V2) - TP17(gnd) at 2 mV/div
Plug in x1 headstage
Ground via 10 MΩ, 1% or better
Set Bridge Balance ME2 to indicate 10 MΩ
Externally activate thumbwheel at 100 Hz
Thumbwheel on 050.0
[ ] Trim RVT7 for a null

25. ME2 Bridge offset
Switch step command off
Use Offset control to center trace on screen
[ ] Trim RVT15 so that trace does not shift as Bridge pot increased to maximum

26. V2 DPM accuracy
Using the DVM monitor TP15(V2)
Set Bridge Balance ME2 to indicate 0 MΩ
Thumbwheel on 050.0 continuous
Repetitively switch from +050.0 to -050.0
[ ] Adjust trim pot inside V2 DPM to read same as DVM

27. VC COM
Set up TEVC at high gain (requires two electrodes and an RC cell model)
Hold near 0 V
Using the DVM monitor TP13 (10.Vm)
Thumbwheel on 100.0 continuous
Destination VC
Repetitively switch from +100.0 to -100.0
[ ] Trim RVT19 for 2.000 V difference

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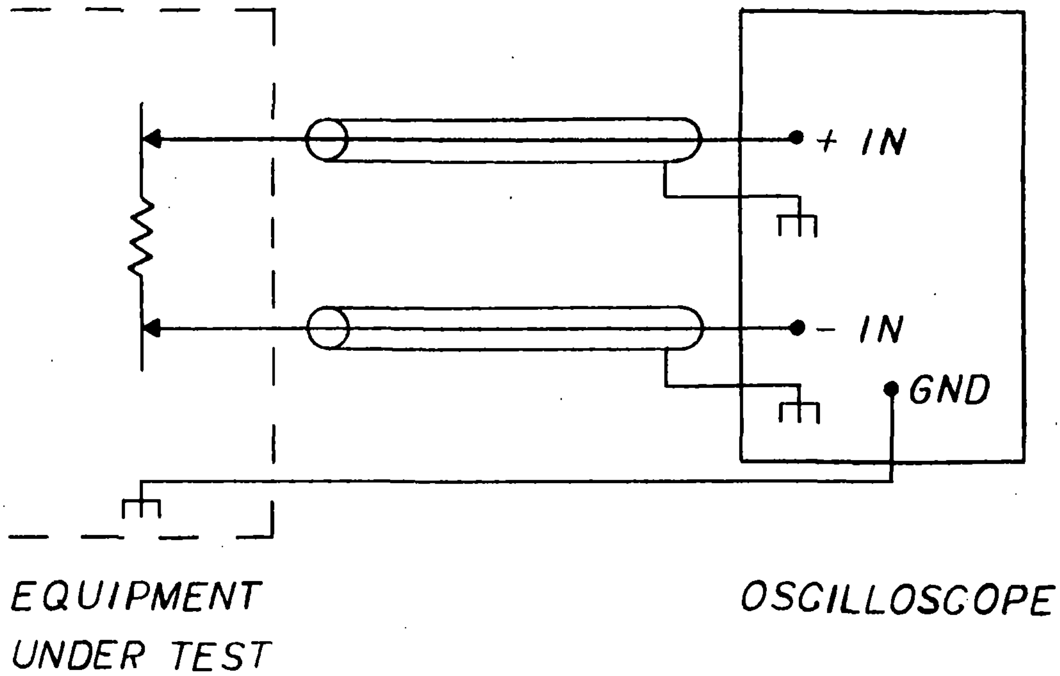


FIG. 2 - DIFFERENTIAL MEASUREMENTS ON OSCILLOSCOPE

Correct technique for connecting an oscilloscope to make differential measurements in the frequency ranges encountered in the AXOCLAMP-2A.

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/usr/qad/c4.p
Page: 1

2.4 BILL OF MATERIAL BY ITEM REPORT
Axon Instruments, Inc.

Date: 02/13/90
Time: 12:47:23

Level	Item	Component	Rev	Description	Ref	Qty	UM	P	Mfg	Manufacturer Part
PARENT		AXOCLAMP		VOLTAGE CLAMP			EA			
1	101	2500-000	C	MANUAL, OPERATOR'S, AXOCLAMP-2	NONE	1.0	EA		AXON	
.2	1	6020-002	A	DOC, COVER SET W/WINDOW, NAV BLU, PRINTED	NONE	1.0	EA		GBC	5000052
.2	2	6020-005	A	BINDING, SPIRAL, 0.500 DIAMETER WITH NAME	NONE	1.0	EA		AXON	
1	101	2950-034	A	S/U, AXOCLAMP	NONE	1.0	EA		AXON	AXOCLAMP
.2	1	2300-047	C	ELMCH, AXOCLAMP	NONE	1.0	EA	y	AXON	
..3	101	2270-024	D	PCB, STUFFED AXOCLAMP-2 MAIN BOARD	NONE	1.0	EA	y	AXON	
...4	1	4200-008		IC, OP AMP, FET, LT1056	A1	1.0	EA		LINTECH	LT1056CN8
...4	2	4220-008		IC, VOLTAGE REF, +5V, REF-02C	A2	1.0	EA		LINTECH	REF-02CN8
...4	3	4200-000		IC, OP AMP, LOW OFFSET, LT1001	A3	1.0	EA		LINTECH	LT1001CN8
...4	4	4200-001		IC, OP AMP, LOW NOISE, LT1007	A4	1.0	EA		LINTECH	LT1007CN8
...4	5	4200-022		IC, OP AMP, 45V, AM464-2/22645	A5	1.0	EA		DATEL	AM464-2
...4	6	4200-009		IC, OP AMP, FET, LT1056ACH	A6	1.0	EA		LINTECH	LT1056ACH
...4	7	4200-022		IC, OP AMP, 45V, AM464-2/22645	A7	1.0	EA		DATEL	AM464-2
...4	8	4200-008		IC, OP AMP, FET, LT1056	A8	1.0	EA		LINTECH	LT1056CN8
...4	9	4200-000		IC, OP AMP, LOW OFFSET, LT1001	A9	1.0	EA		LINTECH	LT1001CN8
...4	10	4200-016		IC, OP AMP, QUAD, MC34004	A10	1.0	EA		LINTECH	LT1058CN8
...4	11	4200-001		IC, OP AMP, LOW NOISE, LT1007	A11	1.0	EA		LINTECH	LT1007CN8
...4	12	4200-022		IC, OP AMP, 45V, AM464-2/22645	A12	1.0	EA		DATEL	AM464-2
...4	13	4200-001		IC, OP AMP, LOW NOISE, LT1007	A13	1.0	EA		LINTECH	LT1007CN8
...4	14	4200-008		IC, OP AMP, FET, LT1056	A14	1.0	EA		LINTECH	LT1056CN8
...4	15	4200-009		IC, OP AMP, FET, LT1056ACH	A15	1.0	EA		LINTECH	LT1056ACH
...4	16	4200-008		IC, OP AMP, FET, LT1056	A16	1.0	EA		LINTECH	LT1056CN8
...4	17	4450-000		IC, S + H, 5320-5 SHM-20C	A17	1.0	EA		DATELINT	SHM-20C
...4	18	4200-016		IC, OP AMP, QUAD, MC34004	A18	1.0	EA		LINTECH	LT1058CN8
...4	19	4200-016		IC, OP AMP, QUAD, MC34004	A19	1.0	EA		LINTECH	LT1058CN8
...4	20	4200-016		IC, OP AMP, QUAD, MC34004	A20	1.0	EA		LINTECH	LT1058CN8
...4	21	4200-020		IC, OP AMP, FET, LF357	A21	1.0	EA		MOTOROLA	LF357J
...4	22	4450-000		IC, S + H, 5320-5 SHM-20C	A22	1.0	EA		DATELINT	SHM-20C
...4	23	4200-017		IC, OP AMP, DUAL, LF353	A23	1.0	EA		MOTOROLA	LF353N
...4	24	4200-018		IC, OP AMP, FET, LF356	A24	1.0	EA		LINTECH	LT1056CN8
...4	25	4200-018		IC, OP AMP, FET, LF356	A25	1.0	EA		LINTECH	LT1056CN8
...4	26	4200-018		IC, OP AMP, FET, LF356	A26	1.0	EA		LINTECH	LT1056CN8
...4	27	4200-018		IC, OP AMP, FET, LF356	A27	1.0	EA		LINTECH	LT1056CN8
...4	28	4200-008		IC, OP AMP, FET, LT1056	A28	1.0	EA		LINTECH	LT1056CN8
...4	29	4200-008		IC, OP AMP, FET, LT1056	A29	1.0	EA		LINTECH	LT1056CN8
...4	30	4200-000		IC, OP AMP, LOW OFFSET, LT1001	A30	1.0	EA		LINTECH	LT1001CN8
...4	31	4200-000		IC, OP AMP, LOW OFFSET, LT1001	A31	1.0	EA		LINTECH	LT1001CN8
...4	32	4200-001		IC, OP AMP, LOW NOISE, LT1007	A32	1.0	EA		LINTECH	LT1007CN8
...4	33	4200-008		IC, OP AMP, FET, LT1056	A33	1.0	EA		LINTECH	LT1056CN8
...4	51	4100-008		IC, CMOS, PHASE-LOCKED LOOP, NATSEMI, 4046	U1	1.0	EA		NATSEMI	CD4046BCN
...4	52	4100-003		IC, CMOS, 5-STAGE JOHNSON COUNTER, 4017	U2	1.0	EA		MOTOROLA	MC14017BCP
...4	53	4100-000		IC, CMOS, QUAD 2-INP NOR, 4001	U3	1.0	EA		FAIRCHLD	4001BPC
...4	54	4100-001		IC, CMOS, QUAD 2-INP NAND, 4011	U4	1.0	EA		MOTOROLA	MC14011BCP
...4	55	4100-009		IC, CMOS, HEX INVERTING BUFFER, 4049	U5	1.0	EA		MOTOROLA	MC14049UBCP
...4	56	4100-005		IC, CMOS, TRIPLE 3-INP NOR, 4025	U6	1.0	EA		HARRIS	CD4025BE
...4	57	4100-005		IC, CMOS, TRIPLE 3-INP NOR, 4025	U7	1.0	EA		HARRIS	CD4025BE
...4	58	4100-006		IC, CMOS, 1-OF-10 DECODER, 4028	U8	1.0	EA		MOTOROLA	MC14028BCP
...4	59	4440-000		IC, HEPT DARLINGTON DRIVER, 9665	U9	1.0	EA		FAIRCHLD	UA9665PC
...4	60	4440-000		IC, HEPT DARLINGTON DRIVER, 9665	U10	1.0	EA		FAIRCHLD	UA9665PC
...4	61	4230-008		IC, SWITCH, JFET, SPDT X2, NOT FOR NEW DESIGNS	U11	1.0	EA		ANLGDEVC	AD7512DIJN

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...4	62	4230-008		IC, SWITCH, JFET, SPDT X2, NOT FOR NEW DESIGNS	U12	1.0	EA		ANLGDEVC	AD7512DIJN
...4	63	4100-004		IC, CMOS, QUAD 2-INP MULTIPLEXER, 4019	U13	1.0	EA		MOTOROLA	MC14019BCP
...4	64	3000-001		COMPONENT NOT PRESENT	U14	1.0	EA		AXON	
...4	65	4210-000		IC, V/F F/V CONVERTOR, VFC32K	U15	1.0	EA		ANLGDEVC	ADVFC32KN
...4	101	4620-000		TRANSISTOR, NPN, TO-92, 2484/PN100A	Q1	1.0	EA		FAIRCHLD	PN2484
...4	102	4620-000		TRANSISTOR, NPN, TO-92, 2484/PN100A	Q2	1.0	EA		FAIRCHLD	PN2484
...4	103	4620-000		TRANSISTOR, NPN, TO-92, 2484/PN100A	Q3	1.0	EA		FAIRCHLD	PN2484
...4	104	4620-000		TRANSISTOR, NPN, TO-92, 2484/PN100A	Q4	1.0	EA		FAIRCHLD	PN2484
...4	105	4620-000		TRANSISTOR, NPN, TO-92, 2484/PN100A	Q5	1.0	EA		FAIRCHLD	PN2484
...4	106	4640-001		TRANSISTOR, POWER, PNP, TO-39, 2N4036	Q6	1.0	EA		MOTOROLA	2N4036
...4	107	4610-001		TRANSISTOR, N-MOSFET, TO-92, 2N7000	Q7	1.0	EA		SILCONIX	2N700
...4	201	4030-000		DIODE, CUR RGLTR, 600MW, 60POV, 7.5MA, CIL254/55	CRD1	1.0	EA		TELCRYST	CIL-254
...4	202	4030-000		DIODE, CUR RGLTR, 600MW, 60POV, 7.5MA, CIL254/55	CRD2	1.0	EA		TELCRYST	CIL-254
...4	203	4030-000		DIODE, CUR RGLTR, 600MW, 60POV, 7.5MA, CIL254/55	CRD3	1.0	EA		TELCRYST	CIL-254
...4	204	4030-000		DIODE, CUR RGLTR, 600MW, 60POV, 7.5MA, CIL254/55	CRD4	1.0	EA		TELCRYST	CIL-254
...4	301	4030-001		DIODE, ZENER, 500MW, 1.8V, 1N4614 / 1N4678	VR1	1.0	EA		MOSTEK	1N4614
...4	302	4030-001		DIODE, ZENER, 500MW, 1.8V, 1N4614 / 1N4678	VR2	1.0	EA		MOSTEK	1N4614
...4	303	4030-001		DIODE, ZENER, 500MW, 1.8V, 1N4614 / 1N4678	VR3	1.0	EA		MOSTEK	1N4614
...4	304	4030-001		DIODE, ZENER, 500MW, 1.8V, 1N4614 / 1N4678	VR4	1.0	EA		MOSTEK	1N4614
...4	305	4220-004		IC, VOLTAGE REG, +5V, 78L05A	VR5	1.0	EA		FAIRCHLD	MA78L05AWC
...4	351	4020-000		DIODE, SI, SIGNAL, 1N914	D1	1.0	EA		FAIRCHLD	1N914
...4	352	4020-000		DIODE, SI, SIGNAL, 1N914	D2	1.0	EA		FAIRCHLD	1N914
...4	353	4020-000		DIODE, SI, SIGNAL, 1N914	D3	1.0	EA		FAIRCHLD	1N914
...4	401	3130-017		CAP, FILM, PS, 50V, 2.5%, 100P	C1	1.0	EA		MALLORY	SXL310
...4	402	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C2	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	403	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C3	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	404	3130-001		CAP, FILM, 10%, 100V, 0.01U	C4	1.0	EA		ARCO	PRI-103-K-2A
...4	405	3130-009		CAP, FILM, 10%, 100V, 0.0033U	C5	1.0	EA		ARCO	PRI-332-K-2A
...4	406	3130-000		CAP, FILM, 10%, 100V, 0.001U	C6	1.0	EA		ARCO	PRI-102-K-2A
...4	407	3130-001		CAP, FILM, 10%, 100V, 0.01U	C7	1.0	EA		ARCO	PRI-103-K-2A
...4	408	3130-009		CAP, FILM, 10%, 100V, 0.0033U	C8	1.0	EA		ARCO	PRI-332-K-2A
...4	409	3100-004		CAP, CER, DISC, 50V, 10%, 150P	C9	1.0	EA		MALLORY	GE151K
...4	410	3160-001		CAP, TANT, 25V, 10U	C10	1.0	EA		KEMET	T353E106K025AS
...4	411	3160-001		CAP, TANT, 25V, 10U	C11	1.0	EA		KEMET	T353E106K025AS
...4	412	3130-006		CAP, FILM, 10%, 100V, 0.0022U	C12	1.0	EA		ARCO	PRI-222-K-2A
...4	413	3100-000		CAP, CER, DISC, 50V, 10%, 10P	C13	1.0	EA		MALLORY	GE100D
...4	414	3100-000		CAP, CER, DISC, 50V, 10%, 10P	C14	1.0	EA		MALLORY	GE100D
...4	415	3100-007		CAP, CER, DISC, 50V, 10%, 33P	C15	1.0	EA		MALLORY	GE330K
...4	416	3100-003		CAP, CER, DISC, 50V, 10%, 15P	C16	1.0	EA		MALLORY	GE150K
...4	417	3100-004		CAP, CER, DISC, 50V, 10%, 150P	C17	1.0	EA		MALLORY	GE151K
...4	418	3160-001		CAP, TANT, 25V, 10U	C18	1.0	EA		KEMET	T353E106K025AS
...4	419	3160-001		CAP, TANT, 25V, 10U	C19	1.0	EA		KEMET	T353E106K025AS
...4	420	3000-001		COMPONENT NOT PRESENT	C20	1.0	EA		AXON	
...4	421	3130-000		CAP, FILM, 10%, 100V, 0.001U	C21	1.0	EA		ARCO	PRI-102-K-2A
...4	422	3130-000		CAP, FILM, 10%, 100V, 0.001U	C22	1.0	EA		ARCO	PRI-102-K-2A
...4	423	3100-007		CAP, CER, DISC, 50V, 10%, 33P	C23	1.0	EA		MALLORY	GE330K
...4	424	3100-003		CAP, CER, DISC, 50V, 10%, 15P	C24	1.0	EA		MALLORY	GE150K
...4	425	3130-000		CAP, FILM, 10%, 100V, 0.001U	C25	1.0	EA		ARCO	PRI-102-K-2A
...4	426	3160-000		CAP, TANT, 35V, 1U	C26	1.0	EA		KEMET	T353A105K035AS
...4	427	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C27	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	428	3120-006		CAP, ALUM, ELCTLT, RDL LEAD, 25V, 100U	C28	1.0	EA		ILLINOIS	107RMR025
...4	429	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C29	1.0	EA		KEMET	C323C104Z5U5CAC924

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...4	430	3120-006		CAP, ALUM, ELCTLT, RDL LEAD, 25V, 100U	C30	1.0	EA		ILLINOIS	107RMR025
...4	431	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C31	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	432	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C32	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	433	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C33	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	434	3160-000		CAP, TANT, 35V, 1U	C34	1.0	EA		KEMET	T353A105K035AS
...4	435	3130-000		CAP, FILM, 10%, 100V, 0.001U	C35	1.0	EA		ARCO	PRI-102-K-2A
...4	436	3130-001		CAP, FILM, 10%, 100V, 0.01U	C36	1.0	EA		ARCO	PRI-103-K-2A
...4	437	3100-001		CAP, CER, DISC, 50V, 10%, 100P	C37	1.0	EA		MALLORY	GE101K
...4	438	3160-000		CAP, TANT, 35V, 1U	C38	1.0	EA		KEMET	T353A105K035AS
...4	439	3130-000		CAP, FILM, 10%, 100V, 0.001U	C39	1.0	EA		ARCO	PRI-102-K-2A
...4	440	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C40	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	441	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C41	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	442	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C42	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	443	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C43	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	444	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C44	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	445	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C45	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	446	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C46	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	447	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C47	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	448	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C48	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	449	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C49	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	450	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C50	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	451	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C51	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	452	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C52	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	453	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C53	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	454	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C54	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	455	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C55	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	456	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C56	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	457	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C57	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	458	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C58	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	459	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C59	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	460	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C60	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	461	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C61	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	462	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C62	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	463	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C63	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	464	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C64	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	465	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C65	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	466	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C66	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	467	3160-000		CAP, TANT, 35V, 1U	C67	1.0	EA		KEMET	T353A105K035AS
...4	468	3130-001		CAP, FILM, 10%, 100V, 0.01U	C68	1.0	EA		ARCO	PRI-103-K-2A
...4	469	3160-000		CAP, TANT, 35V, 1U	C69	1.0	EA		KEMET	T353A105K035AS
...4	470	3100-000		CAP, CER, DISC, 50V, 10%, 10P	C70	1.0	EA		MALLORY	GE100D
...4	471	3130-001		CAP, FILM, 10%, 100V, 0.01U	C71	1.0	EA		ARCO	PRI-103-K-2A
...4	472	3130-000		CAP, FILM, 10%, 100V, 0.001U	C72	1.0	EA		ARCO	PRI-102-K-2A
...4	473	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C73	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	474	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C74	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	475	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C75	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	476	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C76	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	477	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C77	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	478	3130-000		CAP, FILM, 10%, 100V, 0.001U	C78	1.0	EA		ARCO	PRI-102-K-2A
...4	479	3130-018		CAP, FILM, PS, 50V, 2.5%, 330P	C79	1.0	EA		MALLORY	SXL333
...4	480	3130-000		CAP, FILM, 10%, 100V, 0.001U	C80	1.0	EA		ARCO	PRI-102-K-2A
...4	481	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C81	1.0	EA		KEMET	C323C104Z5U5CAC924

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...4	482	3100-006		CAP, CER, DISC, 50V, 10%, 220P	C82	1.0	EA		MALLORY	GE221K
...4	501	3450-000		RELAY, PCB MOUNT, DIP, FORM 1C, 5V	RL1	1.0	EA		CPCLARE	PRMA1C05B
...4	502	3450-000		RELAY, PCB MOUNT, DIP, FORM 1C, 5V	RL2	1.0	EA		CPCLARE	PRMA1C05B
...4	503	3450-000		RELAY, PCB MOUNT, DIP, FORM 1C, 5V	RL3	1.0	EA		CPCLARE	PRMA1C05B
...4	504	3450-000		RELAY, PCB MOUNT, DIP, FORM 1C, 5V	RL4	1.0	EA		CPCLARE	PRMA1C05B
...4	505	3450-000		RELAY, PCB MOUNT, DIP, FORM 1C, 5V	RL5	1.0	EA		CPCLARE	PRMA1C05B
...4	506	3450-000		RELAY, PCB MOUNT, DIP, FORM 1C, 5V	RL6	1.0	EA		CPCLARE	PRMA1C05B
...4	507	3450-000		RELAY, PCB MOUNT, DIP, FORM 1C, 5V	RL7	1.0	EA		CPCLARE	PRMA1C05B
...4	508	3450-000		RELAY, PCB MOUNT, DIP, FORM 1C, 5V	RL8	1.0	EA		CPCLARE	PRMA1C05B
...4	509	3450-000		RELAY, PCB MOUNT, DIP, FORM 1C, 5V	RL9	1.0	EA		CPCLARE	PRMA1C05B
...4	510	3450-000		RELAY, PCB MOUNT, DIP, FORM 1C, 5V	RL10	1.0	EA		CPCLARE	PRMA1C05B
...4	511	3450-000		RELAY, PCB MOUNT, DIP, FORM 1C, 5V	RL11	1.0	EA		CPCLARE	PRMA1C05B
...4	512	3450-000		RELAY, PCB MOUNT, DIP, FORM 1C, 5V	RL12	1.0	EA		CPCLARE	PRMA1C05B
...4	513	3450-000		RELAY, PCB MOUNT, DIP, FORM 1C, 5V	RL13	1.0	EA		CPCLARE	PRMA1C05B
...4	601	3220-000		CONN, PCB, 0.100, STRAIGHT, GOLD, 4-PIN	J1	1.0	EA		PANDUIT	MPSS100-4-D-A
...4	602	3220-001		CONN, PCB, 0.100, STRAIGHT, GOLD, 8-PIN	J2	1.0	EA		PANDUIT	MPSS100-8-D-A
...4	603	3200-005		CONN, D SUB, FEMALE, 90 DEG PCB W/BRKT, 15-PIN	J3	1.0	EA		AMP	117-DA-15SA
...4	604	3200-005		CONN, D SUB, FEMALE, 90 DEG PCB W/BRKT, 15-PIN	J4	1.0	EA		AMP	117-DA-15SA
...4	605	3200-005		CONN, D SUB, FEMALE, 90 DEG PCB W/BRKT, 15-PIN	J5	1.0	EA		AMP	117-DA-15SA
...4	606	3200-005		CONN, D SUB, FEMALE, 90 DEG PCB W/BRKT, 15-PIN	J6	1.0	EA		AMP	117-DA-15SA
...4	607	3200-005		CONN, D SUB, FEMALE, 90 DEG PCB W/BRKT, 15-PIN	J7	1.0	EA		AMP	117-DA-15SA
...4	608	3220-002		CONN, PCB, 0.100, STRAIGHT, GOLD, 12-PIN	J8	1.0	EA		PANDUIT	MPSS100-12-T-A
...4	609	3220-001		CONN, PCB, 0.100, STRAIGHT, GOLD, 8-PIN	J9	1.0	EA		PANDUIT	MPSS100-8-D-A
...4	610	3220-003		CONN, PCB, 0.100, STRAIGHT, GOLD, 16-PIN	J10	1.0	EA		PANDUIT	MPSS100-16-T-A
...4	611	3220-002		CONN, PCB, 0.100, STRAIGHT, GOLD, 12-PIN	J11	1.0	EA		PANDUIT	MPSS100-12-T-A
...4	612	3220-004		CONN, PCB, 0.100, STRAIGHT, GOLD, 20-PIN	J12	1.0	EA		PANDUIT	MPSS100-20-C-A
...4	613	3220-004		CONN, PCB, 0.100, STRAIGHT, GOLD, 20-PIN	J13	1.0	EA		PANDUIT	MPSS100-20-C-A
...4	614	3220-003		CONN, PCB, 0.100, STRAIGHT, GOLD, 16-PIN	J14	1.0	EA		PANDUIT	MPSS100-16-T-A
...4	615	3220-001		CONN, PCB, 0.100, STRAIGHT, GOLD, 8-PIN	J15	1.0	EA		PANDUIT	MPSS100-8-D-A
...4	616	3220-000		CONN, PCB, 0.100, STRAIGHT, GOLD, 4-PIN	J16	1.0	EA		PANDUIT	MPSS100-4-D-A
...4	617	3220-000		CONN, PCB, 0.100, STRAIGHT, GOLD, 4-PIN	J17	1.0	EA		PANDUIT	MPSS100-4-D-A
...4	618	3220-002		CONN, PCB, 0.100, STRAIGHT, GOLD, 12-PIN	J18	1.0	EA		PANDUIT	MPSS100-12-T-A
...4	619	3220-000		CONN, PCB, 0.100, STRAIGHT, GOLD, 4-PIN	J19	1.0	EA		PANDUIT	MPSS100-4-D-A
...4	701	3330-003		HEATSINK, TO-5, PRESS ON	A5	1.0	EA		THRMLLY	2225B
...4	702	3330-003		HEATSINK, TO-5, PRESS ON	A7	1.0	EA		THRMLLY	2225B
...4	703	3330-003		HEATSINK, TO-5, PRESS ON	A12	1.0	EA		THRMLLY	2225B
...4	801	3410-002		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 10K	RVT1	1.0	EA		BOURNS	3299Y-1-103
...4	802	3410-004		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 200R	RVT2	1.0	EA		BOURNS	3296Y-1-201
...4	803	3410-006		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 20K	RVT3	1.0	EA		BOURNS	3296Y-1-203
...4	804	3410-008		POT, TRIM, MULTI-TURN CERMENT, TOP ADJUST, 500R	RVT4	1.0	EA		BOURNS	3296Y-1-501
...4	805	3410-006		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 20K	RVT5	1.0	EA		BOURNS	3296Y-1-203
...4	806	3410-009		POT, TRIM, MULTI-TURN,CERMET, TOP ADJUST, 5K	RVT6	1.0	EA		BOURNS	3296Y-1-502
...4	807	3410-009		POT, TRIM, MULTI-TURN,CERMET, TOP ADJUST, 5K	RVT7	1.0	EA		BOURNS	3296Y-1-502
...4	808	3410-004		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 200R	RVT8	1.0	EA		BOURNS	3296Y-1-201
...4	809	3410-006		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 20K	RVT9	1.0	EA		BOURNS	3296Y-1-203
...4	810	3410-004		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 200R	RVT10	1.0	EA		BOURNS	3296Y-1-201
...4	811	3410-006		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 20K	RVT11	1.0	EA		BOURNS	3296Y-1-203
...4	812	3410-009		POT, TRIM, MULTI-TURN,CERMET, TOP ADJUST, 5K	RVT12	1.0	EA		BOURNS	3296Y-1-502
...4	813	3410-010		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 50K	RVT13	1.0	EA		BOURNS	3296Y-1-503
...4	814	3410-010		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 50K	RVT14	1.0	EA		BOURNS	3296Y-1-503
...4	815	3410-006		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 20K	RVT15	1.0	EA		BOURNS	3296Y-1-203
...4	816	3410-010		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 50K	RVT16	1.0	EA		BOURNS	3296Y-1-503

2.4 BILL OF MATERIAL BY ITEM REPORT
Axon Instruments, Inc.

Level	Item	Component	Rev	Description	Ref	Qty	UM	P	Mfg	Manufacturer Part
...4	817	3000-001		COMPONENT NOT PRESENT	RVT17	1.0	EA		AXON	
...4	818	3410-005		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 2K	RVT18	1.0	EA		BOURNS	3296Y-1-202
...4	819	3410-005		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 2K	RVT19	1.0	EA		BOURNS	3296Y-1-202
...4	820	3000-001		COMPONENT NOT PRESENT	RVT20	1.0	EA		AXON	
...4	821	3410-006		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 20K	RVT21	1.0	EA		BOURNS	3296Y-1-203
...4	822	3410-010		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 50K	RVT22	1.0	EA		BOURNS	3296Y-1-503
...4	823	3410-008		POT, TRIM, MULTI-TURN CERMENT, TOP ADJUST, 500R	RVT23	1.0	EA		BOURNS	3296Y-1-501
...4	824	3410-001		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 1K	RVT24	1.0	EA		BOURNS	3296Y-1-102
...4	825	3410-001		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 1K	RVT25	1.0	EA		BOURNS	3296Y-1-102
...4	826	3410-006		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 20K	RVT26	1.0	EA		BOURNS	3296Y-1-203
...4	901	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA1	1.0	EA		AMP	2-640463-4
...4	902	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA2	1.0	EA		AMP	2-640463-4
...4	903	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA3	1.0	EA		AMP	2-640463-4
...4	904	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA4	1.0	EA		AMP	2-640463-4
...4	905	3600-001		SOCKET, IC, GOLD PLD, 8-PIN ROUND, 0.23 DIA	XA5	1.0	EA		ARIES	8L-514-10
...4	906	3600-001		SOCKET, IC, GOLD PLD, 8-PIN ROUND, 0.23 DIA	XA6	1.0	EA		ARIES	8L-514-10
...4	907	3600-001		SOCKET, IC, GOLD PLD, 8-PIN ROUND, 0.23 DIA	XA7	1.0	EA		ARIES	8L-514-10
...4	908	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA8	1.0	EA		AMP	2-640463-4
...4	909	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA9	1.0	EA		AMP	2-640463-4
...4	910	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XA10	1.0	EA		AMP	2-640357-4
...4	911	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA11	1.0	EA		AMP	2-640463-4
...4	912	3600-001		SOCKET, IC, GOLD PLD, 8-PIN ROUND, 0.23 DIA	XA12	1.0	EA		ARIES	8L-514-10
...4	913	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA13	1.0	EA		AMP	2-640463-4
...4	914	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA14	1.0	EA		AMP	2-640463-4
...4	915	3600-001		SOCKET, IC, GOLD PLD, 8-PIN ROUND, 0.23 DIA	XA15	1.0	EA		ARIES	8L-514-10
...4	916	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA16	1.0	EA		AMP	2-640463-4
...4	917	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XA17	1.0	EA		AMP	2-640357-4
...4	918	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XA18	1.0	EA		AMP	2-640357-4
...4	919	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XA19	1.0	EA		AMP	2-640357-4
...4	920	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XA20	1.0	EA		AMP	2-640357-4
...4	921	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA21	1.0	EA		AMP	2-640463-4
...4	922	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XA22	1.0	EA		AMP	2-640357-4
...4	923	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA23	1.0	EA		AMP	2-640463-4
...4	924	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA24	1.0	EA		AMP	2-640463-4
...4	925	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA25	1.0	EA		AMP	2-640463-4
...4	926	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA26	1.0	EA		AMP	2-640463-4
...4	927	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA27	1.0	EA		AMP	2-640463-4
...4	928	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA28	1.0	EA		AMP	2-640463-4
...4	929	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA29	1.0	EA		AMP	2-640463-4
...4	930	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA30	1.0	EA		AMP	2-640463-4
...4	931	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA31	1.0	EA		AMP	2-640463-4
...4	932	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA32	1.0	EA		AMP	2-640463-4
...4	951	3600-005		SOCKET, IC, GOLD PLD, DUAL LEAF, 16-PIN	XU1	1.0	EA		AMP	2-640358-4
...4	952	3600-005		SOCKET, IC, GOLD PLD, DUAL LEAF, 16-PIN	XU2	1.0	EA		AMP	2-640358-4
...4	953	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XU3	1.0	EA		AMP	2-640357-4
...4	954	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XU4	1.0	EA		AMP	2-640357-4
...4	955	3600-005		SOCKET, IC, GOLD PLD, DUAL LEAF, 16-PIN	XU5	1.0	EA		AMP	2-640358-4
...4	956	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XU6	1.0	EA		AMP	2-640357-4
...4	957	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XU7	1.0	EA		AMP	2-640357-4
...4	958	3600-005		SOCKET, IC, GOLD PLD, DUAL LEAF, 16-PIN	XU8	1.0	EA		AMP	2-640358-4
...4	959	3600-005		SOCKET, IC, GOLD PLD, DUAL LEAF, 16-PIN	XU9	1.0	EA		AMP	2-640358-4
...4	960	3600-005		SOCKET, IC, GOLD PLD, DUAL LEAF, 16-PIN	XU10	1.0	EA		AMP	2-640358-4

Level	Item	Component	Rev	Description	Ref	Qty	UM	P	Mfg	Manufacturer Part
...4	961	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XU11	1.0	EA		AMP	2-640357-4
...4	962	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XU12	1.0	EA		AMP	2-640357-4
...4	963	3600-005		SOCKET, IC, GOLD PLD, DUAL LEAF, 16-PIN	XU13	1.0	EA		AMP	2-640358-4
...4	964	3000-001		COMPONENT NOT PRESENT	XU14	1.0	EA		AXON	
...4	965	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XU15	1.0	EA		AMP	2-640357-4
...4	981	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XRL1	1.0	EA		AMP	2-640357-4
...4	982	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XRL2	1.0	EA		AMP	2-640357-4
...4	983	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XRL3	1.0	EA		AMP	2-640357-4
...4	984	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XRL4	1.0	EA		AMP	2-640357-4
...4	985	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XRL5	1.0	EA		AMP	2-640357-4
...4	986	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XRL6	1.0	EA		AMP	2-640357-4
...4	987	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XRL7	1.0	EA		AMP	2-640357-4
...4	988	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XRL8	1.0	EA		AMP	2-640357-4
...4	989	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XRL9	1.0	EA		AMP	2-640357-4
...4	990	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XRL10	1.0	EA		AMP	2-640357-4
...4	991	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XRL11	1.0	EA		AMP	2-640357-4
...4	992	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XRL12	1.0	EA		AMP	2-640357-4
...4	993	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XRL13	1.0	EA		AMP	2-640357-4
...4	1001	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R1	1.0	EA		DALE	CCF-55
...4	1002	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R2	1.0	EA		DALE	CCF-55
...4	1003	3500-171		RES, FILM, MET, 0.25W, 1%, 100PPM, 499R	R3	1.0	EA		DALE	CCF-55
...4	1004	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R4	1.0	EA		DALE	CCF-55
...4	1005	3530-001		RES, HI MEG, CARBON CMPSN, 0.25W, 5%, 10M	R5	1.0	EA		ALLNBRAD	RC07GF106J
...4	1006	3500-138		RES, FILM, MET, 0.25W, 1%, 100PPM, 39R2	R6	1.0	EA		DALE	CCF-55
...4	1007	3500-006		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K	R7	1.0	EA		DALE	CCF-55
...4	1008	3500-123		RES, FILM, MET, 0.25W, 1%, 100PPM, 332R	R8	1.0	EA		DALE	CCF-55
...4	1009	3500-132		RES, FILM, MET, 0.25W, 1%, 100PPM, 332K	R9	1.0	EA		DALE	CCF-55
...4	1010	3500-003		RES, FILM, MET, 0.25W, 1%, 100PPM, 100R	R10	1.0	EA		DALE	CCF-55
...4	1011	3500-078		RES, FILM, MET, 0.25W. 1%, 100PPM, 221R	R11	1.0	EA		DALE	CCF-55
...4	1012	3500-171		RES, FILM, MET, 0.25W, 1%, 100PPM, 499R	R12	1.0	EA		DALE	CCF-55
...4	1013	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R13	1.0	EA		DALE	CCF-55
...4	1014	3560-001		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 10K00	R14	1.0	EA		DALE	CMF-55-T9-B
...4	1015	3500-159		RES, FILM, MET, 0.25W, 1%, 100PPM, 4K75	R15	1.0	EA		DALE	CCF-55
...4	1016	3500-006		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K	R16	1.0	EA		DALE	CCF-55
...4	1017	3500-231		RES, FILM, MET, 0.25W, 1%, 100PPM, 9K	R17	1.0	EA		DALE	CMF-55-T1
...4	1018	3500-015		RES, FILM, MET, 0.25W, 1%, 100PPM, 1M	R18	1.0	EA		DALE	CCF-55
...4	1019	3560-001		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 10K00	R19	1.0	EA		DALE	CMF-55-T9-B
...4	1020	3560-001		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 10K00	R20	1.0	EA		DALE	CMF-55-T9-B
...4	1021	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R21	1.0	EA		DALE	CCF-55
...4	1022	3500-180		RES, FILM, MET, 0.25W, 1%, 100PPM, 499K	R22	1.0	EA		DALE	CCF-55
...4	1023	3560-001		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 10K00	R23	1.0	EA		DALE	CMF-55-T9-B
...4	1024	3500-171		RES, FILM, MET, 0.25W, 1%, 100PPM, 499R	R24	1.0	EA		DALE	CCF-55
...4	1025	3500-018		RES, FILM, MET, 0.25W, 1%, 100PPM, 12R1	R25	1.0	EA		DALE	CCF-55
...4	1026	3500-147		RES, FILM, MET, 0.25W, 1%, 100PPM, 39K2	R26	1.0	EA		DALE	CCF-55
...4	1027	3500-084		RES, FILM, MET, 0.25W, 1%, 100PPM, 22K1	R27	1.0	EA		DALE	CCF-55
...4	1028	3500-156		RES, FILM, MET, 0.25W, 1%, 100PPM, 475R	R28	1.0	EA		CORNING	RN60D4750F
...4	1029	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R29	1.0	EA		DALE	CCF-55
...4	1030	3500-177		RES, FILM, MET, 0.25W, 1%, 100PPM, 49K9	R30	1.0	EA		DALE	CCF-55
...4	1031	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R31	1.0	EA		DALE	CCF-55
...4	1032	3500-171		RES, FILM, MET, 0.25W, 1%, 100PPM, 499R	R32	1.0	EA		DALE	CCF-55
...4	1033	3500-042		RES, FILM, MET, 0.25W, 1%, 100PPM, 15K	R33	1.0	EA		DALE	CCF-55
...4	1034	3500-123		RES, FILM, MET, 0.25W, 1%, 100PPM, 332R	R34	1.0	EA		DALE	CCF-55

Level	Item	Component	Rev	Description	Ref	Qty	UM	P	Mfg	Manufacturer Part
...4	1035	3500-006		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K	R35	1.0	EA		DALE	CCF-55
...4	1036	3500-002		RES, FILM, MET, 0.25W, 1%, 100PPM, 10R	R36	1.0	EA		DALE	CCF-55
...4	1037	3500-006		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K	R37	1.0	EA		DALE	CCF-55
...4	1038	3500-042		RES, FILM, MET, 0.25W, 1%, 100PPM, 15K	R38	1.0	EA		DALE	CCF-55
...4	1039	3500-123		RES, FILM, MET, 0.25W, 1%, 100PPM, 332R	R39	1.0	EA		DALE	CCF-55
...4	1040	3500-006		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K	R40	1.0	EA		DALE	CCF-55
...4	1041	3500-039		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K5	R41	1.0	EA		DALE	CCF-55
...4	1042	3500-159		RES, FILM, MET, 0.25W, 1%, 100PPM, 4K75	R42	1.0	EA		DALE	CCF-55
...4	1043	3500-096		RES, FILM, MET, 0.25W, 1%, 100PPM, 2K74	R43	1.0	EA		DALE	CCF-55
...4	1044	3500-096		RES, FILM, MET, 0.25W, 1%, 100PPM, 2K74	R44	1.0	EA		DALE	CCF-55
...4	1045	3500-002		RES, FILM, MET, 0.25W, 1%, 100PPM, 10R	R45	1.0	EA		DALE	CCF-55
...4	1046	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R46	1.0	EA		DALE	CCF-55
...4	1047	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R47	1.0	EA		DALE	CCF-55
...4	1048	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R48	1.0	EA		DALE	CCF-55
...4	1049	3500-006		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K	R49	1.0	EA		DALE	CCF-55
...4	1050	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R50	1.0	EA		DALE	CCF-55
...4	1051	3560-001		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 10K00	R51	1.0	EA		DALE	CMF-55-T9-B
...4	1052	3560-007		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 15K00	R52	1.0	EA		DALE	CMF-55-T9-B
...4	1053	3560-007		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 15K00	R53	1.0	EA		DALE	CMF-55-T9-B
...4	1054	3560-001		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 10K00	R54	1.0	EA		DALE	CMF-55-T9-B
...4	1055	3500-084		RES, FILM, MET, 0.25W, 1%, 100PPM, 22K1	R55	1.0	EA		DALE	CCF-55
...4	1056	3500-002		RES, FILM, MET, 0.25W, 1%, 100PPM, 10R	R56	1.0	EA		DALE	CCF-55
...4	1057	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R57	1.0	EA		DALE	CCF-55
...4	1058	3500-099		RES, FILM, MET, 0.25W, 1%, 100PPM, 27K4	R58	1.0	EA		DALE	CCF-55
...4	1059	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R59	1.0	EA		DALE	CCF-55
...4	1060	3500-222		RES, FILM, MET, 0.25W, 1%, 100PPM, 82K5	R60	1.0	EA		DALE	CCF-55
...4	1061	3500-147		RES, FILM, MET, 0.25W, 1%, 100PPM, 39K2	R61	1.0	EA		DALE	CCF-55
...4	1062	3500-039		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K5	R62	1.0	EA		DALE	CCF-55
...4	1063	3500-039		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K5	R63	1.0	EA		DALE	CCF-55
...4	1064	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R64	1.0	EA		DALE	CCF-55
...4	1065	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R65	1.0	EA		DALE	CCF-55
...4	1066	3500-057		RES, FILM, MET, 0.25W, 1%, 100PPM, 18K2	R66	1.0	EA		DALE	CCF-55
...4	1067	3500-003		RES, FILM, MET, 0.25W, 1%, 100PPM, 100R	R67	1.0	EA		DALE	CCF-55
...4	1068	3500-015		RES, FILM, MET, 0.25W, 1%, 100PPM, 1M	R68	1.0	EA		DALE	CCF-55
...4	1069	3500-042		RES, FILM, MET, 0.25W, 1%, 100PPM, 15K	R69	1.0	EA		DALE	CCF-55
...4	1070	3500-123		RES, FILM, MET, 0.25W, 1%, 100PPM, 332R	R70	1.0	EA		DALE	CCF-55
...4	1071	3500-006		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K	R71	1.0	EA		DALE	CCF-55
...4	1072	3500-042		RES, FILM, MET, 0.25W, 1%, 100PPM, 15K	R72	1.0	EA		DALE	CCF-55
...4	1073	3500-006		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K	R73	1.0	EA		DALE	CCF-55
...4	1074	3500-002		RES, FILM, MET, 0.25W, 1%, 100PPM, 10R	R74	1.0	EA		DALE	CCF-55
...4	1075	3500-123		RES, FILM, MET, 0.25W, 1%, 100PPM, 332R	R75	1.0	EA		DALE	CCF-55
...4	1076	3500-006		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K	R76	1.0	EA		DALE	CCF-55
...4	1077	3500-039		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K5	R77	1.0	EA		DALE	CCF-55
...4	1078	3500-002		RES, FILM, MET, 0.25W, 1%, 100PPM, 10R	R78	1.0	EA		DALE	CCF-55
...4	1079	3500-081		RES, FILM, MET, 0.25W, 1%, 100PPM, 2K21	R79	1.0	EA		DALE	CCF-55
...4	1080	3500-189		RES, FILM, MET, 0.25W, 1%, 100PPM, 5K62	R80	1.0	EA		DALE	CCF-55
...4	1081	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R81	1.0	EA		DALE	CCF-55
...4	1082	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R82	1.0	EA		DALE	CCF-55
...4	1083	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R83	1.0	EA		DALE	CCF-55
...4	1084	3560-001		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 10K00	R84	1.0	EA		DALE	CMF-55-T9-B
...4	1085	3560-007		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 15K00	R85	1.0	EA		DALE	CMF-55-T9-B
...4	1086	3560-007		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 15K00	R86	1.0	EA		DALE	CMF-55-T9-B

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Level	Item	Component	Rev	Description	Ref	Qty	UM	P	Mfg	Manufacturer Part
...4	1087	3560-001		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 10K00	R87	1.0	EA		DALE	CMF-55-T9-B
...4	1088	3500-084		RES, FILM, MET, 0.25W, 1%, 100PPM, 22K1	R88	1.0	EA		DALE	CCF-55
...4	1089	3500-002		RES, FILM, MET, 0.25W, 1%, 100PPM, 10R	R89	1.0	EA		DALE	CCF-55
...4	1090	3500-069		RES, FILM, MET, 0.25W, 1%, 100PPM, 20K	R90	1.0	EA		DALE	CCF-55
...4	1091	3500-069		RES, FILM, MET, 0.25W, 1%, 100PPM, 20K	R91	1.0	EA		DALE	CCF-55
...4	1092	3500-069		RES, FILM, MET, 0.25W, 1%, 100PPM, 20K	R92	1.0	EA		DALE	CCF-55
...4	1093	3500-069		RES, FILM, MET, 0.25W, 1%, 100PPM, 20K	R93	1.0	EA		DALE	CCF-55
...4	1094	3500-006		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K	R94	1.0	EA		DALE	CCF-55
...4	1095	3500-144		RES, FILM, MET, 0.25W, 1%, 100PPM, 3K92	R95	1.0	EA		DALE	CCF-55
...4	1096	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R96	1.0	EA		DALE	CCF-55
...4	1097	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R97	1.0	EA		DALE	CCF-55
...4	1098	3500-099		RES, FILM, MET, 0.25W, 1%, 100PPM, 27K4	R98	1.0	EA		DALE	CCF-55
...4	1099	3500-099		RES, FILM, MET, 0.25W, 1%, 100PPM, 27K4	R99	1.0	EA		DALE	CCF-55
...4	1100	3500-039		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K5	R100	1.0	EA		DALE	CCF-55
...4	1101	3500-039		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K5	R101	1.0	EA		DALE	CCF-55
...4	1102	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R102	1.0	EA		DALE	CCF-55
...4	1103	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R103	1.0	EA		DALE	CCF-55
...4	1104	3500-057		RES, FILM, MET, 0.25W, 1%, 100PPM, 18K2	R104	1.0	EA		DALE	CCF-55
...4	1105	3500-159		RES, FILM, MET, 0.25W, 1%, 100PPM, 4K75	R105	1.0	EA		DALE	CCF-55
...4	1106	3500-066		RES, FILM, MET, 0.25W, 1%, 100PPM, 2K	R106	1.0	EA		DALE	CCF-55
...4	1107	3500-066		RES, FILM, MET, 0.25W, 1%, 100PPM, 2K	R107	1.0	EA		DALE	CCF-55
...4	1108	3500-081		RES, FILM, MET, 0.25W, 1%, 100PPM, 2K21	R108	1.0	EA		DALE	CCF-55
...4	1109	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R109	1.0	EA		DALE	CCF-55
...4	1110	3500-219		RES, FILM, MET, 0.25W, 1%, 100PPM, 8K25	R110	1.0	EA		DALE	CCF-55
...4	1111	3560-001		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 10K00	R111	1.0	EA		DALE	CMF-55-T9-B
...4	1112	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R112	1.0	EA		DALE	CCF-55
...4	1113	3560-001		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 10K00	R113	1.0	EA		DALE	CMF-55-T9-B
...4	1114	3560-001		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 10K00	R114	1.0	EA		DALE	CMF-55-T9-B
...4	1115	3500-171		RES, FILM, MET, 0.25W, 1%, 100PPM, 499R	R115	1.0	EA		DALE	CCF-55
...4	1116	3560-001		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 10K00	R116	1.0	EA		DALE	CMF-55-T9-B
...4	1117	3500-180		RES, FILM, MET, 0.25W, 1%, 100PPM, 499K	R117	1.0	EA		DALE	CCF-55
...4	1118	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R118	1.0	EA		DALE	CCF-55
...4	1119	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R119	1.0	EA		DALE	CCF-55
...4	1120	3500-159		RES, FILM, MET, 0.25W, 1%, 100PPM, 4K75	R120	1.0	EA		DALE	CCF-55
...4	1121	3500-162		RES, FILM, MET, 0.25W, 1%, 100PPM, 47K5	R121	1.0	EA		DALE	CCF-55
...4	1122	3500-159		RES, FILM, MET, 0.25W, 1%, 100PPM, 4K75	R122	1.0	EA		DALE	CCF-55
...4	1123	3500-162		RES, FILM, MET, 0.25W, 1%, 100PPM, 47K5	R123	1.0	EA		DALE	CCF-55
...4	1124	3500-159		RES, FILM, MET, 0.25W, 1%, 100PPM, 4K75	R124	1.0	EA		DALE	CCF-55
...4	1125	3500-162		RES, FILM, MET, 0.25W, 1%, 100PPM, 47K5	R125	1.0	EA		DALE	CCF-55
...4	1126	3500-159		RES, FILM, MET, 0.25W, 1%, 100PPM, 4K75	R126	1.0	EA		DALE	CCF-55
...4	1127	3500-162		RES, FILM, MET, 0.25W, 1%, 100PPM, 47K5	R127	1.0	EA		DALE	CCF-55
...4	1128	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R128	1.0	EA		DALE	CCF-55
...4	1129	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R129	1.0	EA		DALE	CCF-55
...4	1130	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R130	1.0	EA		DALE	CCF-55
...4	1131	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R131	1.0	EA		DALE	CCF-55
...4	1132	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R132	1.0	EA		DALE	CCF-55
...4	1133	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R133	1.0	EA		DALE	CCF-55
...4	1134	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R134	1.0	EA		DALE	CCF-55
...4	1135	3500-075		RES, FILM, MET, 0.25W, 1%, 100PPM, 22R1	R135	1.0	EA		DALE	CCF-55
...4	1136	3500-075		RES, FILM, MET, 0.25W, 1%, 100PPM, 22R1	R136	1.0	EA		DALE	CCF-55
...4	1137	3500-002		RES, FILM, MET, 0.25W, 1%, 100PPM, 10R	R137	1.0	EA		DALE	CCF-55
...4	1138	3500-075		RES, FILM, MET, 0.25W, 1%, 100PPM, 22R1	R138	1.0	EA		DALE	CCF-55

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Level	Item	Component	Rev	Description	Ref	Qty	UM	P	Mfg	Manufacturer Part
...4	1139	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R139	1.0	EA		DALE	CCF-55
...4	1140	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R140	1.0	EA		DALE	CCF-55
...4	1141	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R141	1.0	EA		DALE	CCF-55
...4	1142	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R142	1.0	EA		DALE	CCF-55
...4	1143	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R143	1.0	EA		DALE	CCF-55
...4	1144	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R144	1.0	EA		DALE	CCF-55
...4	1145	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R145	1.0	EA		DALE	CCF-55
...4	1146	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R146	1.0	EA		DALE	CCF-55
...4	1147	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R147	1.0	EA		DALE	CCF-55
...4	1148	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R148	1.0	EA		DALE	CCF-55
...4	1149	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R149	1.0	EA		DALE	CCF-55
...4	1150	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R150	1.0	EA		DALE	CCF-55
...4	1151	3500-099		RES, FILM, MET, 0.25W, 1%, 100PPM, 27K4	R151	1.0	EA		DALE	CCF-55
...4	1152	3500-192		RES, FILM, MET, 0.25W, 1%, 100PPM, 56K2	R152	1.0	EA		DALE	CCF-55
...4	1153	3500-006		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K	R153	1.0	EA		DALE	CCF-55
...4	1154	3500-141		RES, FILM, MET, 0.25W, 1%, 100PPM, 392R	R154	1.0	EA		DALE	CCF-55
...4	1155	3500-057		RES, FILM, MET, 0.25W, 1%, 100PPM, 18K2	R155	1.0	EA		DALE	CCF-55
...4	1156	3500-006		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K	R156	1.0	EA		DALE	CCF-55
...4	1157	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R157	1.0	EA		DALE	CCF-55
...4	1158	3500-006		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K	R158	1.0	EA		DALE	CCF-55
...4	1159	3500-015		RES, FILM, MET, 0.25W, 1%, 100PPM, 1M	R159	1.0	EA		DALE	CCF-55
...4	1160	3500-015		RES, FILM, MET, 0.25W, 1%, 100PPM, 1M	R160	1.0	EA		DALE	CCF-55
...4	1161	3500-081		RES, FILM, MET, 0.25W, 1%, 100PPM, 2K21	R161	1.0	EA		DALE	CCF-55
...4	1162	3500-066		RES, FILM, MET, 0.25W, 1%, 100PPM, 2K	R162	1.0	EA		DALE	CCF-55
...4	1163	3500-123		RES, FILM, MET, 0.25W, 1%, 100PPM, 332R	R163	1.0	EA		DALE	CCF-55
...4	1164	3560-001		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 10K00	R164	1.0	EA		DALE	CMF-55-T9-B
...4	1165	3560-001		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 10K00	R165	1.0	EA		DALE	CMF-55-T9-B
...4	1166	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R166	1.0	EA		DALE	CCF-55
...4	1167	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R167	1.0	EA		DALE	CCF-55
...4	1168	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R168	1.0	EA		DALE	CCF-55
...4	1169	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R169	1.0	EA		DALE	CCF-55
...4	1170	3500-126		RES, FILM, MET, 0.25W, 1%, 100PPM, 3K32	R170	1.0	EA		DALE	CCF-55
...4	1171	3500-054		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K82	R171	1.0	EA		DALE	CCF-55
...4	1172	3500-054		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K82	R172	1.0	EA		DALE	CCF-55
...4	1173	3500-147		RES, FILM, MET, 0.25W, 1%, 100PPM, 39K2	R173	1.0	EA		DALE	CCF-55
...4	1174	3500-147		RES, FILM, MET, 0.25W, 1%, 100PPM, 39K2	R174	1.0	EA		DALE	CCF-55
...4	1175	3500-186		RES, FILM, MET, 0.25W, 1%, 100PPM, 562R	R175	1.0	EA		DALE	CCF-55
...4	1176	3500-051		RES, FILM, MET, 0.25W, 1%, 100PPM, 182R	R176	1.0	EA		DALE	CCF-55
...4	1177	3500-024		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K21	R177	1.0	EA		DALE	CCF-55
...4	1178	3500-024		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K21	R178	1.0	EA		DALE	CCF-55
...4	1179	3500-015		RES, FILM, MET, 0.25W, 1%, 100PPM, 1M	R179	1.0	EA		DALE	CCF-55
...4	1180	3500-002		RES, FILM, MET, 0.25W, 1%, 100PPM, 10R	R180	1.0	EA		DALE	CCF-55
...4	1181	3500-216		RES, FILM, MET, 0.25W, 1%, 100PPM, 825R	R181	1.0	EA		CORNING	RN60D8250F
...4	1182	3500-084		RES, FILM, MET, 0.25W, 1%, 100PPM, 22K1	R182	1.0	EA		DALE	CCF-55
...4	1183	3500-084		RES, FILM, MET, 0.25W, 1%, 100PPM, 22K1	R183	1.0	EA		DALE	CCF-55
...4	1184	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R184	1.0	EA		DALE	CCF-55
...4	1185	3500-219		RES, FILM, MET, 0.25W, 1%, 100PPM, 8K25	R185	1.0	EA		DALE	CCF-55
...4	1186	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R186	1.0	EA		DALE	CCF-55
...4	1187	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R187	1.0	EA		DALE	CCF-55
...4	1188	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R188	1.0	EA		DALE	CCF-55
...4	1189	3500-156		RES, FILM, MET, 0.25W, 1%, 100PPM, 475R	R189	1.0	EA		CORNING	RN60D4750F
...4	1190	3560-001		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 10K00	R190	1.0	EA		DALE	CMF-55-T9-B

Level	Item	Component	Rev	Description	Ref	Qty	UM	P	Mfg	Manufacturer Part
...4	1191	3560-001		RES, FILM, MET, 0.25W, 0.1%, 25PPM, 10K00	R191	1.0	EA		DALE	CMF-55-T9-B
...4	1192	3500-171		RES, FILM, MET, 0.25W, 1%, 100PPM, 499R	R192	1.0	EA		DALE	CCF-55
...4	1193	3500-141		RES, FILM, MET, 0.25W, 1%, 100PPM, 392R	R193	1.0	EA		DALE	CCF-55
...4	1194	3500-159		RES, FILM, MET, 0.25W, 1%, 100PPM, 4K75	R194	1.0	EA		DALE	CCF-55
...4	1195	3500-057		RES, FILM, MET, 0.25W, 1%, 100PPM, 18K2	R195	1.0	EA		DALE	CCF-55
...4	1196	3500-066		RES, FILM, MET, 0.25W, 1%, 100PPM, 2K	R196	1.0	EA		DALE	CCF-55
...4	1197	3500-078		RES, FILM, MET, 0.25W. 1%, 100PPM, 221R	R197	1.0	EA		DALE	CCF-55
...4	1198	3500-156		RES, FILM, MET, 0.25W, 1%, 100PPM, 475R	R198	1.0	EA		CORNING	RN60D4750F
...4	1199	3500-006		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K	R199	1.0	EA		DALE	CCF-55
...4	1200	3500-057		RES, FILM, MET, 0.25W, 1%, 100PPM, 18K2	R200	1.0	EA		DALE	CCF-55
...4	1201	3500-078		RES, FILM, MET, 0.25W. 1%, 100PPM, 221R	R201	1.0	EA		DALE	CCF-55
...4	1202	3500-003		RES, FILM, MET, 0.25W, 1%, 100PPM, 100R	R202	1.0	EA		DALE	CCF-55
...4	1203	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R203	1.0	EA		DALE	CCF-55
...4	1204	3500-069		RES, FILM, MET, 0.25W, 1%, 100PPM, 20K	R204	1.0	EA		DALE	CCF-55
...4	1205	3500-093		RES, FILM, MET, 0.25W, 1%, 100PPM, 274R	R205	1.0	EA		DALE	CCF-55
...4	1206	3500-078		RES, FILM, MET, 0.25W. 1%, 100PPM, 221R	R206	1.0	EA		DALE	CCF-55
...4	1207	3500-177		RES, FILM, MET, 0.25W, 1%, 100PPM, 49K9	R207	1.0	EA		DALE	CCF-55
...4	1208	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R208	1.0	EA		DALE	CCF-55
...4	1209	3500-171		RES, FILM, MET, 0.25W, 1%, 100PPM, 499R	R209	1.0	EA		DALE	CCF-55
...4	1210	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R210	1.0	EA		DALE	CCF-55
...4	1211	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R211	1.0	EA		DALE	CCF-55
...4	1212	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R212	1.0	EA		DALE	CCF-55
...4	1213	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R213	1.0	EA		DALE	CCF-55
...4	1214	3500-003		RES, FILM, MET, 0.25W, 1%, 100PPM, 100R	R214	1.0	EA		DALE	CCF-55
...4	1215	3500-183		RES, FILM, MET, 0.25W, 1%, 100PPM, 56R2	R215	1.0	EA		DALE	CCF-55
...4	1216	3500-021		RES, FILM, MET, 0.25W, 1%, 100PPM, 121R	R216	1.0	EA		DALE	CCF-55
...4	1217	3500-159		RES, FILM, MET, 0.25W, 1%, 100PPM, 4K75	R217	1.0	EA		DALE	CCF-55
...4	1218	3500-159		RES, FILM, MET, 0.25W, 1%, 100PPM, 4K75	R218	1.0	EA		DALE	CCF-55
...4	1219	3500-126		RES, FILM, MET, 0.25W, 1%, 100PPM, 3K32	R219	1.0	EA		DALE	CCF-55
...4	1220	3500-213		RES, FILM, MET, 0.25W, 1%, 100PPM, 82R5	R220	1.0	EA		DALE	CCF-55
...4	1221	3500-057		RES, FILM, MET, 0.25W, 1%, 100PPM, 18K2	R221	1.0	EA		DALE	CCF-55
...4	1222	3500-081		RES, FILM, MET, 0.25W, 1%, 100PPM, 2K21	R222	1.0	EA		DALE	CCF-55
...4	1223	3500-081		RES, FILM, MET, 0.25W, 1%, 100PPM, 2K21	R223	1.0	EA		DALE	CCF-55
...4	1224	3500-141		RES, FILM, MET, 0.25W, 1%, 100PPM, 392R	R224	1.0	EA		DALE	CCF-55
...4	1225	3500-075		RES, FILM, MET, 0.25W, 1%, 100PPM, 22R1	R225	1.0	EA		DALE	CCF-55
...4	1226	3500-075		RES, FILM, MET, 0.25W, 1%, 100PPM, 22R1	R226	1.0	EA		DALE	CCF-55
...4	1227	3500-171		RES, FILM, MET, 0.25W, 1%, 100PPM, 499R	R227	1.0	EA		DALE	CCF-55
...4	1228	3530-001		RES, HI MEG, CARBON CMPSN, 0.25W, 5%, 10M	R228	1.0	EA		ALLNBRAD	RC07GF106J
...4	1229	3500-159		RES, FILM, MET, 0.25W, 1%, 100PPM, 4K75	R229	1.0	EA		DALE	CCF-55
...4	1230	3500-234		RES, FILM, MET, 0.25W, 1%, 100PPM, 90K	R230	1.0	EA		DALE	CMF-55-T1
...4	1231	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R231	1.0	EA		DALE	CCF-55
...4	1232	3500-027		RES, FILM, MET, 0.25W, 1%, 100PPM, 12K1	R232	1.0	EA		DALE	CCF-55
...4	1233	3500-081		RES, FILM, MET, 0.25W, 1%, 100PPM, 2K21	R233	1.0	EA		DALE	CCF-55
...4	1234	3500-159		RES, FILM, MET, 0.25W, 1%, 100PPM, 4K75	R234	1.0	EA		DALE	CCF-55
...4	1235	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R235	1.0	EA		DALE	CCF-55
...4	1236	3500-003		RES, FILM, MET, 0.25W, 1%, 100PPM, 100R	R236	1.0	EA		DALE	CCF-55
...4	1237	3500-162		RES, FILM, MET, 0.25W, 1%, 100PPM, 47K5	R237	1.0	EA		DALE	CCF-55
...4	1238	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R238	1.0	EA		DALE	CCF-55
...4	1239	3500-156		RES, FILM, MET, 0.25W, 1%, 100PPM, 475R	R239	1.0	EA		CORNING	RN60D4750F
...4	1240	3500-036		RES, FILM, MET, 0.25W, 1%, 100PPM, 150R	R240	1.0	EA		DALE	CCF-55
...4	1241	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R241	1.0	EA		DALE	CCF-55
...4	1242	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R242	1.0	EA		DALE	CCF-55

Level	Item	Component	Rev	Description	Ref	Qty	UM	P	Mfg	Manufacturer Part
...4	1243	3500-075		RES, FILM, MET, 0.25W, 1%, 100PPM, 22R1	R423	1.0	EA		DALE	CCF-55
...4	1243	3500-078		RES, FILM, MET, 0.25W. 1%, 100PPM, 221R	R243	1.0	EA		DALE	CCF-55
...4	1244	3500-162		RES, FILM, MET, 0.25W, 1%, 100PPM, 47K5	R244	1.0	EA		DALE	CCF-55
...4	1245	3500-204		RES, FILM, MET, 0.25W, 1%, 100PPM, 6K81	R245	1.0	EA		DALE	CCF-55
...4	1246	3500-156		RES, FILM, MET, 0.25W, 1%, 100PPM, 475R	R246	1.0	EA		CORNING	RN60D4750F
...4	1247	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R247	1.0	EA		DALE	CCF-55
...4	1248	3500-126		RES, FILM, MET, 0.25W, 1%, 100PPM, 3K32	R248	1.0	EA		DALE	CCF-55
...4	1249	3530-001		RES, HI MEG, CARBON CMPSN, 0.25W, 5%, 10M	R249	1.0	EA		ALLNBRAD	RC07GF106J
...4	1250	3500-078		RES, FILM, MET, 0.25W. 1%, 100PPM, 221R	R250	1.0	EA		DALE	CCF-55
...4	1401	3800-002		TERMINAL, PCB, TEST EYELET	TP1	1.0	EA		BICCVERO	20-2137D
...4	1402	3800-002		TERMINAL, PCB, TEST EYELET	TP2	1.0	EA		BICCVERO	20-2137D
...4	1403	3800-002		TERMINAL, PCB, TEST EYELET	TP3	1.0	EA		BICCVERO	20-2137D
...4	1404	3800-002		TERMINAL, PCB, TEST EYELET	TP4	1.0	EA		BICCVERO	20-2137D
...4	1405	3800-002		TERMINAL, PCB, TEST EYELET	TP5	1.0	EA		BICCVERO	20-2137D
...4	1406	3800-002		TERMINAL, PCB, TEST EYELET	TP6	1.0	EA		BICCVERO	20-2137D
...4	1407	3800-002		TERMINAL, PCB, TEST EYELET	TP7	1.0	EA		BICCVERO	20-2137D
...4	1408	3800-002		TERMINAL, PCB, TEST EYELET	TP8	1.0	EA		BICCVERO	20-2137D
...4	1409	3800-002		TERMINAL, PCB, TEST EYELET	TP9	1.0	EA		BICCVERO	20-2137D
...4	1410	3800-002		TERMINAL, PCB, TEST EYELET	TP10	1.0	EA		BICCVERO	20-2137D
...4	1411	3800-002		TERMINAL, PCB, TEST EYELET	TP11	1.0	EA		BICCVERO	20-2137D
...4	1412	3800-002		TERMINAL, PCB, TEST EYELET	TP12	1.0	EA		BICCVERO	20-2137D
...4	1413	3800-002		TERMINAL, PCB, TEST EYELET	TP13	1.0	EA		BICCVERO	20-2137D
...4	1414	3800-002		TERMINAL, PCB, TEST EYELET	TP14	1.0	EA		BICCVERO	20-2137D
...4	1415	3800-002		TERMINAL, PCB, TEST EYELET	TP15	1.0	EA		BICCVERO	20-2137D
...4	1416	3800-002		TERMINAL, PCB, TEST EYELET	TP16	1.0	EA		BICCVERO	20-2137D
...4	1417	3800-002		TERMINAL, PCB, TEST EYELET	TP17	1.0	EA		BICCVERO	20-2137D
...4	1418	3800-002		TERMINAL, PCB, TEST EYELET	TP18	1.0	EA		BICCVERO	20-2137D
...4	1419	3800-002		TERMINAL, PCB, TEST EYELET	TP19	1.0	EA		BICCVERO	20-2137D
...4	1420	3800-002		TERMINAL, PCB, TEST EYELET	TP20	1.0	EA		BICCVERO	20-2137D
...4	1421	3800-002		TERMINAL, PCB, TEST EYELET	TP21	1.0	EA		BICCVERO	20-2137D
...4	1422	3800-002		TERMINAL, PCB, TEST EYELET	TP22	1.0	EA		BICCVERO	20-2137D
...4	1423	3800-002		TERMINAL, PCB, TEST EYELET	TP23	1.0	EA		BICCVERO	20-2137D
...4	1601	3430-001	K	PCB, AXOCLAMP-2 MAIN	NONE	1.0	EA		AXON	
...4	1602	3435-001	K	SCH, AXOCLAMP-2 MAIN	NONE	1.0	EA		AXON	
..3	201	2300-023	A	ELMCH, FRONT PANEL, AXOCLAMP-2	NONE	1.0	EA	y	AXON	
...4	1	3000-001		COMPONENT NOT PRESENT	S301	1.0	EA		AXON	
...4	2	3730-002		SWITCH, ROT, 0.5IN, 2P/2-5T	S302	1.0	EA		ALCOSW	MRS-2-5
...4	3	3730-003		SWITCH, ROT, 0.5IN, 1P/2-10T	S303	1.0	EA		ALCOSW	MRS-1-10
...4	4	3730-003		SWITCH, ROT, 0.5IN, 1P/2-10T	S304	1.0	EA		ALCOSW	MRS-1-10
...4	5	3730-003		SWITCH, ROT, 0.5IN, 1P/2-10T	S305	1.0	EA		ALCOSW	MRS-1-10
...4	6	3730-007	A	SWITCH, ROT, 0.75IN, NON-SHORTING, 2P6T	S306	1.0	EA		AXON	
...4	7	3750-000		SWITCH, TGL, MINI, 2P, ON-NONE-ON	S307	1.0	EA		ALCOSW	MTA-206N
...4	8	3720-005		SWITCH, PB, RECT, MOM, ILLUM, 1P2T	S308	1.0	EA		UNIMAX	TH01-121
...4	9	3720-005		SWITCH, PB, RECT, MOM, ILLUM, 1P2T	S309	1.0	EA		UNIMAX	TH01-121
...4	10	3720-005		SWITCH, PB, RECT, MOM, ILLUM, 1P2T	S310	1.0	EA		UNIMAX	TH01-121
...4	11	3720-005		SWITCH, PB, RECT, MOM, ILLUM, 1P2T	S311	1.0	EA		UNIMAX	TH01-121
...4	12	3750-006		SWITCH, TGL, MINI, 2P, ON-OFF-ON	S312	1.0	EA		ALCOSW	MTA-206P
...4	13	3750-005		SWITCH, TGL, MINI, 1P, ON-OFF-ON	S313	1.0	EA		ALCOSW	MTA1063
...4	14	3730-008		SWITCH, ROT, 0.75IN, NON-SHORTING, 4P3T	S314	1.0	EA		GRAYHILL	71BY233309
...4	15	3730-007	A	SWITCH, ROT, 0.75IN, NON-SHORTING, 2P6T	S315	1.0	EA		AXON	
...4	16	3750-006		SWITCH, TGL, MINI, 2P, ON-OFF-ON	S316	1.0	EA		ALCOSW	MTA-206P
...4	17	3720-000		SWITCH, PB, MINI, MOM, 1P2T	S317	1.0	EA		C&K	8121SYZGE

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...4	18	3750-004		SWITCH, TGL, 1P, (ON)-OFF-(ON), MIL-S-83731	S318	1.0	EA		MICROSWT	1TW1-7
...4	19	3720-000		SWITCH, PB, MINI, MOM, 1P2T	S319	1.0	EA		C&K	8121SYZGE
...4	20	3750-004		SWITCH, TGL, 1P, (ON)-OFF-(ON), MIL-S-83731	S320	1.0	EA		MICROSWT	1TW1-7
...4	52	3720-002		SWITCH, CAP FOR MINI PB, 0.375, BLACK	S317	1.0	EA		C&K	7527-2
...4	53	3720-002		SWITCH, CAP FOR MINI PB, 0.375, BLACK	S319	1.0	EA		C&K	7527-2
...4	61	3720-009		SWITCH, LENS FOR RECT PB, GRN	S308	1.0	EA		UNIMAX	TH01-982-G
...4	62	3720-008		SWITCH, LENS FOR RECT PB, YEL	S309	1.0	EA		UNIMAX	TH01-982-Y
...4	63	3720-010		SWITCH, LENS FOR RECT PB, BLU	S310	1.0	EA		UNIMAX	TH01-982-B
...4	64	3720-007		SWITCH, LENS FOR RECT PB, RED	S311	1.0	EA		UNIMAX	TH01-982-R
...4	71	6300-000	A	LABEL, SET OF 4, AXOCLAMP-2 MODE, SWITCHES	S308	1.0	EA		AXON	
...4	81	3720-006		LAMP, INCAND, T-1.75, MDGT, GRVD BASE, 14V	NONE	4.0	EA		LEDTRNCS	386
...4	101	2300-111	B	ELMCH, THUMBWHEEL-TO-VOLTAGE CONVERTER	A1004	1.0	EA	y	AXON	
....5	1	4420-004		IC, 3.5 DIGIT CMOS D/A, 7525K	A1	1.0	EA		ANLGDEVC	AD7525KN
....5	2	4200-000		IC, OP AMP, LOW OFFSET, LT1001	A2	1.0	EA		LINTECH	LT1001CN8
....5	101	3500-003		RES, FILM, MET, 0.25W, 1%, 100PPM, 100R	R1	1.0	EA		DALE	CCF-55
....5	102	3500-015		RES, FILM, MET, 0.25W, 1%, 100PPM, 1M	R2	1.0	EA		DALE	CCF-55
....5	103	3540-000		NETWORK, 7 AT 10K, 8 PINS	RP1	1.0	EA		BOURNS	4608X-101-103
....5	104	3540-000		NETWORK, 7 AT 10K, 8 PINS	RP2	1.0	EA		BOURNS	4608X-101-103
....5	105	3410-006		POT, TRIM, MULTI-TURN, CERMET, TOP ADJUST, 20K	RVT1	1.0	EA		BOURNS	3296Y-1-203
....5	201	3100-021		CAP, CER, ML, 50V, 20%, 1UF	C1	1.0	EA		KEMET	C330C105M5U5CA
....5	202	3000-001		COMPONENT NOT PRESENT	C2	1.0	EA		AXON	
....5	203	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C3	1.0	EA		KEMET	C323C104Z5U5CAC924
....5	204	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C4	1.0	EA		KEMET	C323C104Z5U5CAC924
....5	301	4020-003		DIODE, SCHOTTKY, 1N6263 / 1N5711	D1	1.0	EA		H-P	1N5711
....5	401	3220-009		CONN, INS DISPL SOCKET, 0.100, GOLD, 8-PIN	P1	1.0	EA		PANDUIT	CE100F24-8-D-A
....5	402	3220-017		CONN, COVER FOR 0.100 INS DISPL, 8-PIN	P1	1.0	EA		PANDUIT	SCC100F-8D
....5	403	3210-000		CONN, EDGE, 5-PIN FOR THUMBWHEEL SWITCH	J2	1.0	EA		CHERRY	C2G0-P123
....5	404	3210-000		CONN, EDGE, 5-PIN FOR THUMBWHEEL SWITCH	J3	1.0	EA		CHERRY	C2G0-P123
....5	405	3210-000		CONN, EDGE, 5-PIN FOR THUMBWHEEL SWITCH	J4	1.0	EA		CHERRY	C2G0-P123
....5	406	3210-000		CONN, EDGE, 5-PIN FOR THUMBWHEEL SWITCH	J5	1.0	EA		CHERRY	C2G0-P123
....5	407	3210-000		CONN, EDGE, 5-PIN FOR THUMBWHEEL SWITCH	J6	1.0	EA		CHERRY	C2G0-P123
....5	501	3700-000		SWITCH, THUMBWHEEL, +-199.9 BCD, SWT1	S1	1.0	EA		CHERRY	T75C-17AB
....5	601	3600-006		SOCKET, IC, GOLD PLD, DUAL LEAF, 18-PIN	XA1	1.0	EA		AMP	2-640359-4
....5	602	3600-000		SOCKET, IC, GOLD PLD, DUAL LEAF, 8-PIN	XA2	1.0	EA		AMP	2-640463-4
....5	701	3430-004	D	PCB, THUMBWHEEL-TO-VOLTAGE CONVERTER	NONE	1.0	EA		AXON	
....5	702	3435-004	C	SCH, THUMBWHEEL-TO-VOLTAGE CONVERTER	NONE	1.0	EA		AXON	
...4	201	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J301	1.0	EA		AMP	227726-2
...4	202	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J302	1.0	EA		AMP	227726-2
...4	203	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J303	1.0	EA		AMP	227726-2
...4	204	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J304	1.0	EA		AMP	227726-2
...4	205	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J305	1.0	EA		AMP	227726-2
...4	206	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J306	1.0	EA		AMP	227726-2
...4	301	3220-008		CONN, INS DISPL SOCKET, 0.100, GOLD, 4-PIN	P301	1.0	EA		PANDUIT	CE100F24-4-D-A
...4	302	3220-011		CONN, INS DISPL SOCKET, 0.100, GOLD, 16-PIN	P310	1.0	EA		PANDUIT	CE100F24-16-T-A
...4	303	3220-012		CONN, INS DISPL SOCKET, 0.100, GOLD, 20-PIN	P312	1.0	EA		PANDUIT	CE100F24-20C-A
...4	304	3220-012		CONN, INS DISPL SOCKET, 0.100, GOLD, 20-PIN	P313	1.0	EA		PANDUIT	CE100F24-20C-A
...4	305	3220-011		CONN, INS DISPL SOCKET, 0.100, GOLD, 16-PIN	P314	1.0	EA		PANDUIT	CE100F24-16-T-A
...4	306	3220-009		CONN, INS DISPL SOCKET, 0.100, GOLD, 8-PIN	P315	1.0	EA		PANDUIT	CE100F24-8-D-A
...4	307	3220-008		CONN, INS DISPL SOCKET, 0.100, GOLD, 4-PIN	P317	1.0	EA		PANDUIT	CE100F24-4-D-A
...4	310	3220-016		CONN, COVER FOR 0.100 INS DISPL, 4-PIN	P301	1.0	EA		PANDUIT	SCC100F-4D
...4	311	3220-019		CONN, COVER FOR 0.100 INS DISPL, 16-PIN	P310	1.0	EA		PANDUIT	SCC100F-16T
...4	312	3220-020		CONN, COVER FOR 0.100 INS DISPL, 20-PIN	P312	1.0	EA		PANDUIT	SCC100F-20C

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...4	313	3220-020		CONN, COVER FOR 0.100 INS DISPL, 20-PIN	P313	1.0	EA		PANDUIT	SCC100F-20C
...4	314	3220-019		CONN, COVER FOR 0.100 INS DISPL, 16-PIN	P314	1.0	EA		PANDUIT	SCC100F-16T
...4	315	3220-017		CONN, COVER FOR 0.100 INS DISPL, 8-PIN	P315	1.0	EA		PANDUIT	SCC100F-8D
...4	316	3220-016		CONN, COVER FOR 0.100 INS DISPL, 4-PIN	P317	1.0	EA		PANDUIT	SCC100F-4D
...4	331	3210-001		CONN, EDGE, 2 X 10, 0.156, EYELETS, W/MOUNTS	P331	1.0	EA		TEXMATE	CN-L10
...4	332	3210-001		CONN, EDGE, 2 X 10, 0.156, EYELETS, W/MOUNTS	P332	1.0	EA		TEXMATE	CN-L10
...4	333	3210-001		CONN, EDGE, 2 X 10, 0.156, EYELETS, W/MOUNTS	P333	1.0	EA		TEXMATE	CN-L10
...4	334	3210-001		CONN, EDGE, 2 X 10, 0.156, EYELETS, W/MOUNTS	P334	1.0	EA		TEXMATE	CN-L10
...4	401	3400-014	A	POT, TEN TURN, WIREWOUND, 10K	R301	1.0	EA		BOURNS	3590S-291-103
...4	402	3400-001	A	POT, SGL TURN, PLSTC, LOG, 100K	R302	1.0	EA		ALLNBRAD	73J1G032P104A
...4	403	3400-005	A	POT, SGL TURN, PLSTC, LIN, 5K	R303	1.0	EA		ALLNBRAD	73J1G032P502U
...4	404	3400-014	A	POT, TEN TURN, WIREWOUND, 10K	R304	1.0	EA		BOURNS	3590S-291-103
...4	405	3400-014	A	POT, TEN TURN, WIREWOUND, 10K	R305	1.0	EA		BOURNS	3590S-291-103
...4	406	3400-017	A	POT, TEN TURN, WIREWOUND, 5K	R306	1.0	EA		BOURNS	3590S-291-502
...4	407	3400-016	A	POT, TEN TURN, WIREWOUND, 20K	R307	1.0	EA		BOURNS	3590S-291-203
...4	408	3400-014	A	POT, TEN TURN, WIREWOUND, 10K	R308	1.0	EA		BOURNS	3590S-291-103
...4	409	3400-014	A	POT, TEN TURN, WIREWOUND, 10K	R309	1.0	EA		BOURNS	3590S-291-103
...4	410	3400-016	A	POT, TEN TURN, WIREWOUND, 20K	R310	1.0	EA		BOURNS	3590S-291-203
...4	411	3400-014	A	POT, TEN TURN, WIREWOUND, 10K	R311	1.0	EA		BOURNS	3590S-291-103
...4	412	3400-016	A	POT, TEN TURN, WIREWOUND, 20K	R312	1.0	EA		BOURNS	3590S-291-203
...4	413	3400-007	A	POT, SGL TURN, PLSTC, DUAL, LOG-LIN, 10K	R313	1.0	EA		ALLNBRAD	25M319
...4	421	3500-006		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K	R321	1.0	EA		DALE	CCF-55
...4	422	3500-126		RES, FILM, MET, 0.25W, 1%, 100PPM, 3K32	R322	1.0	EA		DALE	CCF-55
...4	423	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R323	1.0	EA		DALE	CCF-55
...4	424	3500-129		RES, FILM, MET, 0.25W, 1%, 100PPM, 33K2	R324	1.0	EA		DALE	CCF-55
...4	425	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R325	1.0	EA		DALE	CCF-55
...4	426	3500-006		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K	R326	1.0	EA		DALE	CCF-55
...4	427	3500-126		RES, FILM, MET, 0.25W, 1%, 100PPM, 3K32	R327	1.0	EA		DALE	CCF-55
...4	428	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R328	1.0	EA		DALE	CCF-55
...4	429	3500-129		RES, FILM, MET, 0.25W, 1%, 100PPM, 33K2	R329	1.0	EA		DALE	CCF-55
...4	430	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R330	1.0	EA		DALE	CCF-55
...4	431	3500-051		RES, FILM, MET, 0.25W, 1%, 100PPM, 182R	R331	1.0	EA		DALE	CCF-55
...4	432	3500-051		RES, FILM, MET, 0.25W, 1%, 100PPM, 182R	R332	1.0	EA		DALE	CCF-55
...4	433	3500-090		RES, FILM, MET, 0.25W, 1%, 100PPM, 27R4	R333	1.0	EA		DALE	CCF-55
...4	434	3500-012		RES, FILM, MET, 0.25W, 1%, 100PPM, 100K	R334	1.0	EA		DALE	CCF-55
...4	501	3310-001		DIAL, TURNS COUNTING, 1IN DIAM, W/BRAKE	R304	1.0	EA		BOURNS	H-494-3
...4	502	3310-001		DIAL, TURNS COUNTING, 1IN DIAM, W/BRAKE	R305	1.0	EA		BOURNS	H-494-3
...4	503	3310-001		DIAL, TURNS COUNTING, 1IN DIAM, W/BRAKE	R307	1.0	EA		BOURNS	H-494-3
...4	504	3310-001		DIAL, TURNS COUNTING, 1IN DIAM, W/BRAKE	R309	1.0	EA		BOURNS	H-494-3
...4	505	3310-001		DIAL, TURNS COUNTING, 1IN DIAM, W/BRAKE	R310	1.0	EA		BOURNS	H-494-3
...4	506	3310-001		DIAL, TURNS COUNTING, 1IN DIAM, W/BRAKE	R308	1.0	EA		BOURNS	H-494-3
...4	507	3310-001		DIAL, TURNS COUNTING, 1IN DIAM, W/BRAKE	R312	1.0	EA		BOURNS	H-494-3
...4	601	3310-027		KNOB, 14.5MM, 0.25, BLK	R301	1.0	EA		ELMA	020-3520
...4	602	3310-007		KNOB, 14.5MM, 0.25, BLK W/LINE	R302	1.0	EA		ELMA	021-3520
...4	603	3310-007		KNOB, 14.5MM, 0.25, BLK W/LINE	R303	1.0	EA		ELMA	021-3520
...4	604	3310-027		KNOB, 14.5MM, 0.25, BLK	R306	1.0	EA		ELMA	020-3520
...4	605	3310-027		KNOB, 14.5MM, 0.25, BLK	R311	1.0	EA		ELMA	020-3520
...4	606	3310-007		KNOB, 14.5MM, 0.25, BLK W/LINE	R313	1.0	EA		ELMA	021-3520
...4	607	3310-031		KNOB, WING, 14.5MM, 0.125, BLK W/LINE	NONE	3.0	EA		ELMA	023-3220
...4	608	3310-010		KNOB, WING, 10MM, 0.125, BLK W/LINE	S303	1.0	EA		ELMA	023-2220
...4	609	3310-010		KNOB, WING, 10MM, 0.125, BLK W/LINE	S304	1.0	EA		ELMA	023-2220
...4	610	3310-010		KNOB, WING, 10MM, 0.125, BLK W/LINE	S305	1.0	EA		ELMA	023-2220

2.4 BILL OF MATERIAL BY ITEM REPORT
Axon Instruments, Inc.

Level	Item	Component	Rev	Description	Ref	Qty	UM	P	Mfg	Manufacturer Part
...4	611	3310-029		KNOB, WING, 14.5MM, 0.25, BLK W/LINE	S306	1.0	EA		ELMA	023-3520
...4	612	3310-029		KNOB, WING, 14.5MM, 0.25, BLK W/LINE	S314	1.0	EA		ELMA	023-3520
...4	613	3310-029		KNOB, WING, 14.5MM, 0.25, BLK W/LINE	S315	1.0	EA		ELMA	023-3520
...4	701	3310-021		KNOB, CAP FOR 14.5MM, BLK	R301	1.0	EA		ELMA	040-3020
...4	702	3310-021		KNOB, CAP FOR 14.5MM, BLK	R302	1.0	EA		ELMA	040-3020
...4	703	3310-021		KNOB, CAP FOR 14.5MM, BLK	R303	1.0	EA		ELMA	040-3020
...4	704	3310-023		KNOB, CAP FOR 14.5MM, YELLOW	R306	1.0	EA		ELMA	040-3050
...4	705	3310-025		KNOB, CAP FOR 14.5MM, BLUE	R311	1.0	EA		ELMA	040-3040
...4	706	3310-022		KNOB, CAP FOR 14.5MM, RED	R313	1.0	EA		ELMA	040-3030
...4	707	3310-021		KNOB, CAP FOR 14.5MM, BLK	S302	1.0	EA		ELMA	040-3020
...4	708	3310-018		KNOB, CAP FOR 10MM, BLK	S303	1.0	EA		ELMA	040-1020
...4	709	3310-018		KNOB, CAP FOR 10MM, BLK	S304	1.0	EA		ELMA	040-1020
...4	710	3310-018		KNOB, CAP FOR 10MM, BLK	S305	1.0	EA		ELMA	040-1020
...4	711	3310-021		KNOB, CAP FOR 14.5MM, BLK	S306	1.0	EA		ELMA	040-3020
...4	712	3310-021		KNOB, CAP FOR 14.5MM, BLK	S314	1.0	EA		ELMA	040-3020
...4	713	3310-021		KNOB, CAP FOR 14.5MM, BLK	S315	1.0	EA		ELMA	040-3020
...4	801	4010-001		DIODE, LIGHT EMITTING, CRM BEZ, RED	DS301	1.0	EA		ARCO	LH43V1301-A
...4	802	4010-001		DIODE, LIGHT EMITTING, CRM BEZ, RED	DS302	1.0	EA		ARCO	LH43V1301-A
...4	803	4010-003		DIODE, LIGHT EMITTING, CRM BEZ, GRN	DS303	1.0	EA		ARCO	LH43V1503-A
...4	804	4010-003		DIODE, LIGHT EMITTING, CRM BEZ, GRN	DS304	1.0	EA		ARCO	LH43V1503-A
...4	805	4010-002		DIODE, LIGHT EMITTING, CRM BEZ, YEL	DS305	1.0	EA		ARCO	LH43V1401-A
...4	806	4010-002		DIODE, LIGHT EMITTING, CRM BEZ, YEL	DS306	1.0	EA		ARCO	LH43V1401-A
...4	807	4010-000		DIODE, LIGHT EMITTING, T1, RED DIFFUS	DS307	1.0	EA		H-P	HLMP-1301
...4	851	4020-000		DIODE, SI, SIGNAL, 1N914	D301	1.0	EA		FAIRCHLD	1N914
...4	852	4020-000		DIODE, SI, SIGNAL, 1N914	D302	1.0	EA		FAIRCHLD	1N914
...4	853	4020-000		DIODE, SI, SIGNAL, 1N914	D303	1.0	EA		FAIRCHLD	1N914
...4	854	4020-000		DIODE, SI, SIGNAL, 1N914	D304	1.0	EA		FAIRCHLD	1N914
...4	901	4510-000		METER, PANEL, 1.999V, C INTENSITY	M1	1.0	EA		TEXMATE	PM35U-C
...4	902	4510-000		METER, PANEL, 1.999V, C INTENSITY	M2	1.0	EA		TEXMATE	PM35U-C
...4	903	4510-000		METER, PANEL, 1.999V, C INTENSITY	M3	1.0	EA		TEXMATE	PM35U-C
...4	904	4510-000		METER, PANEL, 1.999V, C INTENSITY	M4	1.0	EA		TEXMATE	PM35U-C
...4	1001	3130-000		CAP, FILM, 10%, 100V, 0.001U	C301	1.0	EA		ARCO	PRI-102-K-2A
...4	1002	3130-001		CAP, FILM, 10%, 100V, 0.01U	C302	1.0	EA		ARCO	PRI-103-K-2A
...4	1003	3130-002		CAP, FILM, 10%, 100V, 0.1U	C303	1.0	EA		ARCO	PRI-104-K-2A
...4	1004	3100-021		CAP, CER, ML, 50V, 20%, 1UF	C304	1.0	EA		KEMET	C330C105M5U5CA
...4	1005	3120-000		CAP, ALUM, BIPOLAR, 25V, 10U	C305	1.0	EA		SPRAGUE	TVAN1201.1
...4	1006	3130-000		CAP, FILM, 10%, 100V, 0.001U	C306	1.0	EA		ARCO	PRI-102-K-2A
...4	1102	2600-022	B	MECH, PANEL, FRONT, COMPLETE, AXOCLAMP	NONE	1.0	EA		AXON	
....5	101	5300-080	A	PANEL, FRONT, LEXAN, AXOCLAMP	NONE	1.0	EA	y	AXON	
....5	102	5300-081	A	PANEL, FRONT, SUB-PANEL AXOCLAMP	NONE	1.0	EA	y	AXON	
....5	103	5305-080	A	PANEL, ARTWORK, FRONT, LEXAN, AXOCLAMP	NONE	1.0	EA		AXON	
..3	301	2300-024	B	ELMCH, REAR PANEL, AXOCLAMP-2	NONE	1.0	EA	y	AXON	
...4	1	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J401	1.0	EA		AMP	227726-2
...4	2	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J402	1.0	EA		AMP	227726-2
...4	3	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J403	1.0	EA		AMP	227726-2
...4	4	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J404	1.0	EA		AMP	227726-2
...4	5	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J405	1.0	EA		AMP	227726-2
...4	6	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J406	1.0	EA		AMP	227726-2
...4	7	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J407	1.0	EA		AMP	227726-2
...4	8	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J408	1.0	EA		AMP	227726-2
...4	9	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J409	1.0	EA		AMP	227726-2
...4	10	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J410	1.0	EA		AMP	227726-2

Level	Item	Component	Rev	Description	Ref	Qty	UM	P	Mfg	Manufacturer Part
...4	11	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J411	1.0	EA		AMP	227726-2
...4	12	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J412	1.0	EA		AMP	227726-2
...4	13	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J413	1.0	EA		AMP	227726-2
...4	14	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J414	1.0	EA		AMP	227726-2
...4	15	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J415	1.0	EA		AMP	227726-2
...4	16	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J416	1.0	EA		AMP	227726-2
...4	17	3250-004		CONN, BNC, ISOLATED, PANEL MOUNT, FEMALE	J417	1.0	EA		AMP	227726-2
...4	22	3230-002		JACK, BANANA (4.44MM), PANEL, YELLOW	J422	1.0	EA		EFJOHN	108-0907-001
...4	24	3230-004		JACK, BANANA (4.44MM), PANEL, VIOLET	J424	1.0	EA		EFJOHN	108-0912-001
...4	25	3230-004		JACK, BANANA (4.44MM), PANEL, VIOLET	J425	1.0	EA		EFJOHN	108-0912-001
...4	26	3230-000		JACK, BANANA (4.44MM), PANEL, RED	J426	1.0	EA		CONCORD	07-9084-1-0312
...4	30	3200-000		CONN, D SUB, FEMALE, SOLDER CUP, 15-PIN	J430	1.0	EA		AMPHENOL	117-DA-15S
...4	35	3240-005		CONN, LINE, W/1A FILTER, W/5X20MM FUSE HOLDER	J435	1.0	EA		FELLER	5200-1-23
...4	101	3320-003		FUSE, 5 X 20MM, SLOW, 500MA	F401	1.0	EA		BUSSMAN	GDC-0.5
...4	102	3320-003		FUSE, 5 X 20MM, SLOW, 500MA	F402	1.0	EA		BUSSMAN	GDC-0.5
...4	202	3220-009		CONN, INS DISPL SOCKET, 0.100, GOLD, 8-PIN	P409	1.0	EA		PANDUIT	CE100F24-8-D-A
...4	203	3220-010		CONN, INS DISPL SOCKET, 0.100, GOLD, 12-PIN	P411	1.0	EA		PANDUIT	CE100F24-12-T-A
...4	204	3220-008		CONN, INS DISPL SOCKET, 0.100, GOLD, 4-PIN	P416	1.0	EA		PANDUIT	CE100F24-4-D-A
...4	205	3220-010		CONN, INS DISPL SOCKET, 0.100, GOLD, 12-PIN	P418	1.0	EA		PANDUIT	CE100F24-12-T-A
...4	206	3220-008		CONN, INS DISPL SOCKET, 0.100, GOLD, 4-PIN	P419	1.0	EA		PANDUIT	CE100F24-4-D-A
...4	212	3220-017		CONN, COVER FOR 0.100 INS DISPL, 8-PIN	P409	1.0	EA		PANDUIT	SCC100F-8D
...4	213	3220-018		CONN, COVER FOR 0.100 INS DISPL, 12-PIN	P411	1.0	EA		PANDUIT	SCC100F-12T
...4	214	3220-016		CONN, COVER FOR 0.100 INS DISPL, 4-PIN	P416	1.0	EA		PANDUIT	SCC100F-4D
...4	215	3220-018		CONN, COVER FOR 0.100 INS DISPL, 12-PIN	P418	1.0	EA		PANDUIT	SCC100F-12T
...4	216	3220-016		CONN, COVER FOR 0.100 INS DISPL, 4-PIN	P419	1.0	EA		PANDUIT	SCC100F-4D
...4	301	2600-080	A	MECH, PANEL, REAR, AXOCLAMP-2	NONE	1.0	EA		AXON	
....5	1	5300-016	J	PANEL, REAR, AXOCLAMP-2	NONE	1.0	EA	y	AXON	
....5	2	5305-016	G	PANEL, ARTWORK, REAR, AXOCLAMP-2	NONE	1.0	EA		AXON	
..3	401	2300-054	A	ELMCH, CLAMP CHASSIS, POWER SUPPLY	NONE	1.0	EA	y	AXON	
...4	101	5100-000		CHASSIS, LONG SECT, 420MM	NONE	4.0	EA		ELMA	1818-13
...4	102	5100-005		CHASSIS, DEPTH REDUCING SECT, 420 MM	NONE	1.0	EA		ELMA	1822-33
...4	103	5100-002		CHASSIS, SIDE WALLS WITH FEET, PAIR, 4E	NONE	1.0	EA		ELMA	1485-83
...4	201	5540-005		SPACER, ALUM, 0.75 X 0.25, #4-40	NONE	6.0	EA		CONCORD	643A-7412-19
...4	202	5540-004		SPACER, ALUM, 0.625 X 0.25, #4-40	NONE	4.0	EA		CONCORD	643A-7410-19
...4	301	3810-000	2	TRANSFORMER, LOW HUM, 5 OUTPUT	T1	1.0	EA		AXON	
...4	401	3800-001		TERMINAL, SOLDER LUG, #4 MOUNT, 1 HOLE	NONE	1.0	EA		HHSMITH	1411-4
...4	501	5100-010	H	CHASSIS, PANEL, BASE FOR POWER SUPPLY	NONE	1.0	EA		AXON	
...4	502	5100-011	J	CHASSIS, PANEL, VERTICAL SHIELD	NONE	1.0	EA		AXON	
...4	503	5020-001		BUSHING, NYLON, 0.875 OD X 0.063, B-875-750	NONE	1.0	EA		HEYCO	2850
...4	601	2270-025	E	PCB, STUFFED POWER SUPPLY, AXOCLAMP-2	NONE	1.0	EA	y	AXON	
....5	1	3120-001		CAP, ALUM, ELCTLT, RDL LEAD, 63V, 220U	C1	1.0	EA		MALLORY	VTL220S63
....5	2	3100-014		CAP, CER, DISC, 500V, 0.01U	C2	1.0	EA		MALLORY	GM103M
....5	3	3160-001		CAP, TANT, 25V, 10U	C3	1.0	EA		KEMET	T353E106K025AS
....5	4	3120-001		CAP, ALUM, ELCTLT, RDL LEAD, 63V, 220U	C4	1.0	EA		MALLORY	VTL220S63
....5	5	3100-014		CAP, CER, DISC, 500V, 0.01U	C5	1.0	EA		MALLORY	GM103M
....5	6	3160-001		CAP, TANT, 25V, 10U	C6	1.0	EA		KEMET	T353E106K025AS
....5	7	3100-014		CAP, CER, DISC, 500V, 0.01U	C7	1.0	EA		MALLORY	GM103M
....5	8	3120-002		CAP, ALUM, ELCTLT, RDL LEAD, 63V, 33U	C8	1.0	EA		MALLORY	VTL33S63
....5	9	3120-002		CAP, ALUM, ELCTLT, RDL LEAD, 63V, 33U	C9	1.0	EA		MALLORY	VTL33S63
....5	10	3120-003		CAP, ALUM, ELCTLT, RDL LEAD, 35V, 2200U	C10	1.0	EA		INTCOMP	PDB
....5	11	3100-021		CAP, CER, ML, 50V, 20%, 1UF	C11	1.0	EA		KEMET	C330C105M5U5CA
....5	12	3100-021		CAP, CER, ML, 50V, 20%, 1UF	C12	1.0	EA		KEMET	C330C105M5U5CA

Level	Item	Component	Rev	Description	Ref	Qty	UM	P	Mfg	Manufacturer Part
....5	13	3120-003		CAP, ALUM, ELCTLT, RDL LEAD, 35V, 2200U	C13	1.0	EA		INTCOMP	PDB
....5	14	3100-021		CAP, CER, ML, 50V, 20%, 1UF	C14	1.0	EA		KEMET	C330C105M5U5CA
....5	15	3100-021		CAP, CER, ML, 50V, 20%, 1UF	C15	1.0	EA		KEMET	C330C105M5U5CA
....5	16	3120-004		CAP, ALUM, ELCTLT, RDL LEAD, 16V, 4700U	C16	1.0	EA		INTCOMP	PDB
....5	17	3000-001		COMPONENT NOT PRESENT	C17	1.0	EA		AXON	
....5	18	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	C18	1.0	EA		KEMET	C323C104Z5U5CAC924
....5	101	3500-126		RES, FILM, MET, 0.25W, 1%, 100PPM, 3K32	R1	1.0	EA		DALE	CCF-55
....5	102	3500-054		RES, FILM, MET, 0.25W, 1%, 100PPM, 1K82	R2	1.0	EA		DALE	CCF-55
....5	201	3220-005		CONN, PCB, 0.156, STRAIGHT W/LOCK, 4-PIN	J1	1.0	EA		PANDUIT	MLSS156-4-D
....5	202	3220-005		CONN, PCB, 0.156, STRAIGHT W/LOCK, 4-PIN	J2	1.0	EA		PANDUIT	MLSS156-4-D
....5	203	3220-013		CONN, INS DISPL, SOCKET, 0.156, 4-PIN	NONE	2.0	EA		PANDUIT	CE156F22-4D
....5	204	3220-021		CONN, COVER FOR 0.156 INS DISPL, 4-PIN	P2	1.0	EA		PANDUIT	SCC156F-4-D
....5	205	3220-001		CONN, PCB, 0.100, STRAIGHT, GOLD, 8-PIN	J3	1.0	EA		PANDUIT	MPSS100-8-D-A
....5	206	3220-009		CONN, INS DISPL SOCKET, 0.100, GOLD, 8-PIN	P3	1.0	EA		PANDUIT	CE100F24-8-D-A
....5	207	3220-017		CONN, COVER FOR 0.100 INS DISPL, 8-PIN	P3	1.0	EA		PANDUIT	SCC100F-8D
....5	208	3220-010		CONN, INS DISPL SOCKET, 0.100, GOLD, 12-PIN	P4	1.0	EA		PANDUIT	CE100F24-12-T-A
....5	209	3220-018		CONN, COVER FOR 0.100 INS DISPL, 12-PIN	P4	1.0	EA		PANDUIT	SCC100F-12T
....5	210	3000-001		COMPONENT NOT PRESENT	J5	1.0	EA		AXON	
....5	301	4020-001		DIODE, SI, 1A, 400PIV, 1N4004	D1	1.0	EA		GENELECT	1N4004
....5	302	4020-001		DIODE, SI, 1A, 400PIV, 1N4004	D2	1.0	EA		GENELECT	1N4004
....5	303	4020-001		DIODE, SI, 1A, 400PIV, 1N4004	D3	1.0	EA		GENELECT	1N4004
....5	401	4020-004		DIODE, BRIDGE, 1.5A, 400P IV, W04M	BR1	1.0	EA		GENINST	W04M
....5	402	4020-004		DIODE, BRIDGE, 1.5A, 400P IV, W04M	BR2	1.0	EA		GENINST	W04M
....5	403	4020-004		DIODE, BRIDGE, 1.5A, 400P IV, W04M	BR3	1.0	EA		GENINST	W04M
....5	501	3330-000		HEATSINK, PCB MOUNT, TO-220, 2 IN	H1	1.0	EA		THRMLLY	6092B
....5	502	3330-000		HEATSINK, PCB MOUNT, TO-220, 2 IN	H2	1.0	EA		THRMLLY	6092B
....5	503	3330-000		HEATSINK, PCB MOUNT, TO-220, 2 IN	H3	1.0	EA		THRMLLY	6092B
....5	504	3330-000		HEATSINK, PCB MOUNT, TO-220, 2 IN	H4	1.0	EA		THRMLLY	6092B
....5	505	3330-000		HEATSINK, PCB MOUNT, TO-220, 2 IN	H5	1.0	EA		THRMLLY	6092B
....5	506	5410-000		SCREW, PHH, PNH, SST, #4-40 X 0.188	HEATSIN±	10.0	EA		BAYCITY	4C36+PSS
....5	601	4220-002	A	IC, VOLTAGE REG, +15V, TO-220, 7815CT	VR1	1.0	EA		FAIRCHLD	UA7815UC
....5	602	4220-005	A	IC, VOLTAGE REG, -15V, TO-220, 7915CT	VR2	1.0	EA		FAIRCHLD	UA7915UC
....5	603	4220-002	A	IC, VOLTAGE REG, +15V, TO-220, 7815CT	VR3	1.0	EA		FAIRCHLD	UA7815UC
....5	604	4220-005	A	IC, VOLTAGE REG, -15V, TO-220, 7915CT	VR4	1.0	EA		FAIRCHLD	UA7915UC
....5	605	4220-001		IC, VOLTAGE REG, +5V, TO-220, 7805CT	VR5	1.0	EA		FAIRCHLD	MA7805UC
....5	606	4030-003		DIODE, ZENER, 500MW, 15V, 1N965A	VR6	1.0	EA		MOTOROLA	1N965A
....5	607	4030-003		DIODE, ZENER, 500MW, 15V, 1N965A	VR7	1.0	EA		MOTOROLA	1N965A
....5	701	3800-002		TERMINAL, PCB, TEST EYELET	TP1	1.0	EA		BICCVERO	20-2137D
....5	702	3800-002		TERMINAL, PCB, TEST EYELET	TP2	1.0	EA		BICCVERO	20-2137D
....5	703	3800-002		TERMINAL, PCB, TEST EYELET	TP3	1.0	EA		BICCVERO	20-2137D
....5	704	3800-002		TERMINAL, PCB, TEST EYELET	TP4	1.0	EA		BICCVERO	20-2137D
....5	705	3800-002		TERMINAL, PCB, TEST EYELET	TP5	1.0	EA		BICCVERO	20-2137D
....5	706	3800-002		TERMINAL, PCB, TEST EYELET	TP6	1.0	EA		BICCVERO	20-2137D
....5	707	3800-002		TERMINAL, PCB, TEST EYELET	TP7	1.0	EA		BICCVERO	20-2137D
....5	708	3800-002		TERMINAL, PCB, TEST EYELET	TP8	1.0	EA		BICCVERO	20-2137D
....5	709	3800-002		TERMINAL, PCB, TEST EYELET	TP9	1.0	EA		BICCVERO	20-2137D
....5	710	3800-002		TERMINAL, PCB, TEST EYELET	TP10	1.0	EA		BICCVERO	20-2137D
....5	711	3800-002		TERMINAL, PCB, TEST EYELET	TP11	1.0	EA		BICCVERO	20-2137D
....5	801	3720-019		SWITCH, POWER, PB, PCB MOUNT, 2P2T	S1	1.0	EA		SCHADOW	51811
....5	802	3720-020		SWITCH, CAP FOR POWER PB, BLACK	S1	1.0	EA		SCHADOW	21275
....5	803	3720-018		SWITCH, PLUNGER EXTENDER FOR PUSHBUTTON	S1	6.0	EA		SCHADOW	51985
....5	804	3740-005		SWITCH, SLIDE, PCB MOUNT, 2P, ON-NONE-ON	S2	1.0	EA		C&K	S202031MS02QA

Level	Item	Component	Rev	Description	Ref	Qty	UM	P	Mfg	Manufacturer Part
....5	901	3430-005	F	PCB, POWER SUPPLY, 5 OUTPUT	NONE	1.0	EA		AXON	
....5	902	3435-005-01	E	SCH, POWER SUPPLY, AXOCLAMP	NONE	1.0	EA		AXON	
..3	501	2010-000	B	ASSY MATERIAL, AXOCLAMP-2	NONE	1.0	EA	y	AXON	
...4	1	5430-000		SCREW, PHH, PNH, CHROME, M3 X 6	NONE	6.0	EA		ELMA	1912-06
...4	2	5430-002		SCREW, PHH, PNH, SST, M3 X 5	NONE	6.0	EA		BAYCITY	M3-5+PSS
...4	4	5410-002		SCREW, PHH, PNH, SST, #4-40 X 0.375	NONE	6.0	EA		BAYCITY	
...4	5	5430-001		SCREW, PHH, OVAL, PLD, 100 DEG, M3 X 10	NONE	8.0	EA		ELMA	1905-14
...4	11	5210-006		NUT, HEX, PLD, 0.375-32 X 0.5 X 0.094	NONE	9.0	EA		BAYCITY	
...4	12	5210-010		NUT, HEX, 0.25-40 X 0.313 X 0.062	NONE	3.0	EA		C&K	7002
...4	13	5210-009		NUT, DRESS, 0.25-40, FOR TOGGLE SWITCHES	NONE	6.0	EA		C&K	7099
...4	14	3250-005		CONN, NUT FOR BNC, PLD, 0.375-24 X 0.5 X 0.188	NONE	6.0	EA		BAYCITY	
...4	21	5700-004		WASHER, LOCK, INTL, PLD, 0.375 ID X 0.500 OD	NONE	9.0	EA		BAYCITY	
...4	22	5700-003		WASHER, LOCK, INTL, PLD, 0.25 ID X 0.4 OD	NONE	3.0	EA		C&K	7003-3
...4	23	5700-001		WASHER, LOCK, INTL, PLD, #4 X 0.26 OD	NONE	27.0	EA		BAYCITY	4INT
...4	41	5700-005		WASHER, RETAINING, FOR 0.25 KEYWAY BUSHING	NONE	8.0	EA		C&K	7007
..3	601	2600-051	A	MECH, COVER, 420 X 305 MM, COMPLETE	NONE	2.0	EA		AXON	CLAMP COVER
...4	1	5100-007		CHASSIS, TOP/BOTTOM COVER, 420 X 305 MM	NONE	1.0	EA		ELMA	1466-83
..3	701	6290-011	A	DOC, LINE VOLTAGE INFORMATION	NONE	1.0	EA		AXON	
..3	801	6600-003		PACKAGING, POLYBAG, 24 X 38 X 0.002	NONE	1.0	EA		BARKOFF	24X38 POLY
1	102	2500-001	A	MANUAL, SERVICE, AXOCLAMP-2	NONE	1.0	EA		AXON	
.2	1	6020-002	A	DOC, COVER SET W/WINDOW, NAV BLU, PRINTED	NONE	1.0	EA		GBC	5000052
.2	2	6020-004	A	BINDING, SPIRAL, 0.375 DIAMETER WITH NAME	NONE	1.0	EA		AXON	
.2	3	3435-001	K	SCH, AXOCLAMP-2 MAIN	NONE	0.0	EA		AXON	
.2	4	3435-002	D	SCH, AXOCLAMP REMOTE BUZZ	NONE	0.0	EA		AXON	
.2	5	3435-004	C	SCH, THUMBWHEEL-TO-VOLTAGE CONVERTER	NONE	0.0	EA		AXON	
.2	6	3435-005-01	E	SCH, POWER SUPPLY, AXOCLAMP	NONE	0.0	EA		AXON	
1	103	6290-008	A	DOC, PRINTED, WARRANTY REGISTRATION	NONE	1.0	EA		AXON	
1	104	6290-004	C	DOC, PROBLEMS AND SUGGESTIONS REPORT	NONE	2.0	EA		AXON	
1	105	6250-011	C	DOC, SHIP CHECK LIST, AXOCLAMP	NONE	1.0	EA		AXON	
1	201	2950-035	A	S/U, REMOTE BUZZ, AXOCLAMP	NONE	1.0	EA		AXON	REMOTE BUZZ
.2	1	2300-001	D	ELMCH, AXOCLAMP REMOTE BUZZ	NONE	1.0	EA	y	AXON	
..3	10	2600-019	B	MECH, REMOTE BUZZ	NONE	1.0	EA	y	AXON	
...4	101	5010-005		ALUM, DIE CAST, 2.25 X 1.38 X 1.12, CV TYPE	NONE	1.0	EA		POMONA	2417
..3	101	2270-023	C	PCB, STUFFED, REMOTE BUZZ	NONE	1.0	EA	y	AXON	
...4	101	4100-019		IC, CMOS, DUAL MONOSTABLE, 4538	U1	1.0	EA		GENELECT	CD4538BE
...4	102	4110-003		IC, HC, QUAD 2-INPUT NOR, 74HC02	U2	1.0	EA		MOTOROLA	MC74HC02N
...4	201	3600-005		SOCKET, IC, GOLD PLD, DUAL LEAF, 16-PIN	XU1	1.0	EA		AMP	2-640358-4
...4	202	3600-004		SOCKET, IC, GOLD PLD, DUAL LEAF, 14-PIN	XU2	1.0	EA		AMP	2-640357-4
...4	301	3100-023		CAP, CER, ML, 50V, 10%, 0.1U	C1	1.0	EA		KEMET	C322C104K5R5CA
...4	302	3100-002		CAP, CER, DISC, 50V, 10%, 0.01U	C2	1.0	EA		MALLORY	GE103M
...4	350	3100-020		CAP, CER, ML, 50V, 0.2IN, 0.1U	CB1	1.0	EA		KEMET	C323C104Z5U5CAC924
...4	401	4020-000		DIODE, SI, SIGNAL, 1N914	D1	1.0	EA		FAIRCHLD	1N914
...4	402	4020-000		DIODE, SI, SIGNAL, 1N914	D2	1.0	EA		FAIRCHLD	1N914
...4	501	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R1	1.0	EA		DALE	CCF-55
...4	502	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R2	1.0	EA		DALE	CCF-55
...4	503	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R3	1.0	EA		DALE	CCF-55
...4	504	3500-009		RES, FILM, MET, 0.25W, 1%, 100PPM, 10K	R4	1.0	EA		DALE	CCF-55
...4	505	3500-015		RES, FILM, MET, 0.25W, 1%, 100PPM, 1M	R5	1.0	EA		DALE	CCF-55
...4	550	3400-021	A	POT, SGL TURN, PLSTC, PC MOUNT, LOG, 500K	RT1	1.0	EA		CLARSTAT	31664AJ5003
...4	601	3720-000		SWITCH, PB, MINI, MOM, 1P2T	S1	1.0	EA		C&K	8121SYZGE
...4	602	3720-000		SWITCH, PB, MINI, MOM, 1P2T	S2	1.0	EA		C&K	8121SYZGE
...4	801	3430-002	D	PCB, AXOCLAMP REMOTE BUZZ	PCB0059±	1.0	EA		AXON	

Level	Item	Component	Rev	Description	Ref	Qty	UM	P	Mfg	Manufacturer Part
...4	802	3435-002	D	SCH, AXOCLAMP REMOTE BUZZ	NONE	1.0	EA		AXON	
..3	201	2100-048	A	CABLE, FOR REMOTE BUZZ	NONE	1.0	EA	y	AXON	
...4	101	3010-003	3	CABLE, 8 X 30G, OVERALL SHIELD, 0.13 OD, (HS-2)	NONE	10.0	FT		AXON	
...4	201	5020-003		BUSHING, RUBBER, FOR 0.22 CABLE	NONE	1.0	EA		AMPHENOL	9779-513-4
...4	301	3200-001		CONN, D SUB, MALE, SOLDER CUP, 15-PIN	NONE	1.0	EA		AMP	117-DA-15P
...4	302	3200-003		CONN, D SUB, HOOD, 15-PIN	NONE	1.0	EA		AMP	DA-15
...4	401	5020-006		STRAIN RELIEF, 0.17 CABLE, K-375-125	NONE	1.0	EA		HEYCO	2034
..3	301	3720-002		SWITCH, CAP FOR MINI PB, 0.375, BLACK	S1	1.0	EA		C&K	7527-2
..3	302	3720-003		SWITCH, CAP FOR MINI PB, 0.375, BLUE	S2	1.0	EA		C&K	7527-BLU
..3	303	3310-033		KNOB, 10MM, 0.125, BLK W/LINE	NONE	1.0	EA		ELMA	021-2220
..3	304	3310-018		KNOB, CAP FOR 10MM, BLK	NONE	1.0	EA		ELMA	040-1020
..3	401	2600-096	A	MECH, PANEL, COVER, ROMOTE BUZZ	NONE	1.0	EA		AXON	
...4	1	5300-047	F	PANEL, COVER, REMOTE BUZZ	NONE	1.0	EA	y	AXON	
...4	2	5305-047	D	PANEL, ARTWORK, COVER, REMOTE BUZZ	NONE	1.0	EA		AXON	
..3	402	5440-007		SCREW, SHT MTL, PHH, PAN, #2X0.25X0.085, POMONA	NONE	4.0	EA		BAYCITY	2S14+PA
..3	501	6600-001		PACKAGING, ZIP-LOCK BAG, 6 X 8 X 0.002	NONE	1.0	EA		BARKOFF	6X8ZIP2MIL
1	203	2050-007	A	ACCESSORIES, AXOCLAMP, INCAND, LAMP	NONE	1.0	EA		AXON	LAMP ASSY
.2	1	3720-006		LAMP, INCAND, T-1.75, MDGT, GRVD BASE, 14V	NONE	3.0	EA		LEDTRNCS	386
.2	2	6600-000		PACKAGING, ZIP-LOCK BAG, 3 X 5 X 0.002	NONE	1.0	EA		BARKOFF	3X5ZIPMIL
1	301	2950-033	C	S/U, CLAMP-1 MODEL CELL	NONE	1.0	EA		AXON	CLAMP-1 MODEL CELL
.2	11	2300-020	A	ELMCH, CLAMP-1 MODEL CELL	none	1.0	EA	y	AXON	
..3	101	2100-045	A	CABLE, GND LEAD FOR CLAMP-1 MODEL CELL	GND LEAD	1.0	EA	y	AXON	
...4	1	3235-004		PLUG, 0.080 (2MM), SOLID, GOLD BRASS	P1	1.0	EA		MULTCNTC	22.1002LS2.S
...4	2	3235-004		PLUG, 0.080 (2MM), SOLID, GOLD BRASS	P2	1.0	EA		MULTCNTC	22.1002LS2.S
...4	101	3900-031		WIRE, PATCH, 20G (41 X 36), 0.087 OD, BLK	NONE	1.0	FT		POMONA	4420-0
...4	201	5600-001		TUBING, HEATSHRINK, POLYOLEFIN, 6 X 0.125, BLK	NONE	0.2	FT		ICORALLY	HIX6-1/8
..3	201	2600-016	C	MECH, CLAMP-1 MODEL CELL	NONE	1.0	EA	y	AXON	
...4	101	5200-010	A	MACHINED, PLUG FOR MODEL CELL, 2MM	J1	1.0	EA		AXON	
...4	102	5200-010	A	MACHINED, PLUG FOR MODEL CELL, 2MM	J2	1.0	EA		AXON	
...4	103	3230-009		JACK, 0.080 (2MM), GOLD BRASS, NO INSUL	J3	1.0	EA		CONCORD	09-9101-1-03
...4	201	5010-002		BOX, ALUM, DIE CAST, NO COVER (HS-2 TYPE)	NONE	1.0	EA		POMONA	E10970
..3	301	3530-008		RES, HI MEG, FILM, LOW CAP, 2%, 50M	R1	1.0	EA		ELCTRNIC	CS005-50M-2%
..3	302	3530-008		RES, HI MEG, FILM, LOW CAP, 2%, 50M	R2	1.0	EA		ELCTRNIC	CS005-50M-2%
..3	303	3530-008		RES, HI MEG, FILM, LOW CAP, 2%, 50M	R3	1.0	EA		ELCTRNIC	CS005-50M-2%
..3	401	3100-010		CAP, CER, DISC, 50V 10%, 470P	C1	1.0	EA		MALLORY	EPT3X4-470PF-Y5P10
..3	501	3750-018		SWITCH, TGL, SEALED, 1P, ON-NONE-ON	S1	1.0	EA		C&K	E101SYZBE
..3	603	3230-009		JACK, 0.080 (2MM), GOLD BRASS, NO INSUL	J3	1.0	EA		CONCORD	09-9101-1-03
.2	12	2600-067	A	MECH, PANEL, COVER, CLAMP-1	NONE	1.0	EA		AXON	
..3	1	5300-001	D	PANEL, COVER, CLAMP-1 MODEL CELL	NONE	1.0	EA	y	AXON	
..3	2	5305-001	C	PANEL, ARTWORK, CLAMP-1 MODEL CELL	NONE	1.0	EA		AXON	
.2	13	5440-007		SCREW, SHT MTL, PHH, PAN, #2X0.25X0.085, POMONA	NONE	4.0	EA		BAYCITY	2S14+PA
.2	14	6600-001		PACKAGING, ZIP-LOCK BAG, 6 X 8 X 0.002	NONE	1.0	EA		BARKOFF	6X8ZIP2MIL
1	501	2200-015	B	ELEC, POWER CORD, U.S./INTERNATIONAL	NONE	1.0	EA		AXON	
.2	1	3010-011	A	CABLE, LINE, SHIELDED, U.S. TO IEC, 2M	NONE	0.7	EA		BELDEN	17742
.2	2	3010-013	A	CABLE, LINE, IEC TO CONTINENTAL EUROPEAN, 2M	NONE	0.2	EA		PANLCOMP	86511050
.2	3	3010-014	A	CABLE, LINE, IEC TO AUSTRALIA, 2M	NONE	0.05	EA		PANLCOMP	86516035
.2	4	3010-015	A	CABLE, LINE, IEC TO BRITISH, 2M	NONE	0.05	EA		PANLCOMP	86552005
1	701	2300-055	A	ELMCH, FS-2 FOOT SWITCH	NONE	2.0	EA		AXON	
.2	1	3710-000		SWITCH, FOOT, MOM, 1P2T	S1	1.0	EA		LINEMSTR	491-S
.2	101	3235-006		PLUG, BANANA (4.44MM), STACKING, RED	P1	1.0	EA		EFJOHN	108-1082-001
.2	102	3235-005		PLUG, BANANA (4.44MM), VIOLET	P2	1.0	EA		EFJOHN	108-0312-001
.2	201	3010-001	A	CABLE, LAMP, 2 X 18G (41 X 34), BLACK	NONE	10.0	FT		BELDEN	19122

2.4 BILL OF MATERIAL BY ITEM REPORT
Axon Instruments, Inc.

Level	Item	Component	Rev	Description	Ref	Qty	UM	P	Mfg	Manufacturer Part
.2	202	5020-005		STRAIN RELIEF, 0.245 CABLE, 5MN-3	NONE	1.0	EA		HEYCO	1157
1	801	2900-010	A	PACKAGING, AXOCLAMP	NONE	1.0	EA		AXON	
.2	101	6610-000		PACKAGING, RSC, 275#, D/W, 21.75 X 18 X 13.75"	NONE	1.0	EA		AXON	
.2	102	6610-001		PACKAGING, MAILER, 200 LB, 12X11X2, (MANUALS)	NONE	1.0	EA		WELDO	DC125
.2	103	6620-000	B	PACKAGING, FOAM BLOCKS, SET OF 4, (CLAMP)	NONE	1.0	EA		AXON	
1	901	2950-108	A	S/U, PUSH ON C ABLE, AI 2005, AI 2010	NONE	1.0	EA		AXON	PUSH-ON CABLE SET
.2	101	2100-000	B	CABLE, BNC, PUSH-ON, 150MM	NONE	1.0	EA		TROMPTR	1103-27-6
.2	102	2100-003	B	CABLE, BNC, PUSH-ON, 1M	NONE	1.0	EA		TROMPTR	1103-27-40
.2	103	6600-001		PACKAGING, ZIP-LOCK BAG, 6 X 8 X 0.002	NONE	1.0	EA		BARKOFF	6X8ZIP2MIL
.2	104	2400-066	A	LABEL, PROMOTIONAL SAMPLE, PUSH-ON CABLE	NONE	1.0	EA		AXON	
..3	1	6300-010		LABEL, 1.0 X 0.5, WHITE POLYESTER	NONE	1.0	EA		BRADY	DAT-20-619
.2	105	9320-032	A	LETTER, PROMOTIONAL SAMPLE, PUSH-ON CABLE	NONE	1.0	EA		AXON	

End of Report

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CHANGES TO THE SERVICE MANUAL

To keep abreast of newly developed electronic components, technologies and user comments, Axon Instruments continually tries to improve its products.

Because shipping and manual printing schedules sometimes conflict, your manual may not contain the most up-to-date information. The following pages contain change information, unless your manual is correct as printed.

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